engadget
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042712 #38

JEANS HUANG ON THE FUTURE OF MSI

ASUS' NEXT-GEN TRANSFORMER

PLAYING WITH IVY BRIDGE ON MSI'S GT70

SPRINT'S FIRST 4G RINGER

LASR
BEHIND THE CURTAIN OF THE NAVY'S ROBOTICS LABORATORY

DISTRO
ISSUE #38
04.27.12

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Google Drive Hits the Road

Editor's Letter

We've been hearing about this supposed Google-powered online storage system for years now. Gmail launched way back in 2004 and it wasn't too terribly long after that people started thinking what *else* they could do with a gigabyte of online storage. Soon there were hacks that let you upload and download files to your Gmail account and use it like a network drive, and then Dropbox came along and all was right with the world.

Now, here it is. Google Drive. The first five gigabytes of storage come for free, but if you want more you're looking at paying monthly — there are no annual plans just yet. 25GB is $2.49, 100GB is $4.99 and you can scale all the way up to 16TB for $799.99. (Yes, even at that price Google couldn't round up to a full dollar.) As a purchaser of 20GB extra on my Gmail account I got a bonus 20GB added to Google Drive, which is quite nice, but as of now I don't see it replacing Dropbox for more general-purpose file sharing. It is, however, a pleasant change to have a proper folder system for managing my Google Docs.

Google also bumped Gmail up to a full 10GB this week, quite a lot but, as Microsoft was quick to point out, a good bit less than the infinite storage you can get with Hotmail. And, in even more good news, Big G is now selling the HSPA+ version of the Galaxy Nexus, unlocked, for $399 — without contract. That's a stupendously good price for a fantastic phone and a great chance to ditch those contract blues.

It's financials season again, the season that comes *every* season, and as usual Apple is leading the way with some bombastic numbers. This past quarter alone the company managed a quite tidy $39.2 billion in revenue, profiting $11.6 billion. That beats Wall Street expectations thanks in large part to sales of 35.1 million iPhones and 11.8 million iPads. Not impressed? How about an 88 percent increase in iPhone sales over this time last year and a 151 percent boost in iPad sales. Business, as they say, is booming.

Apple also formally announced the dates for WWDC and started ticket sales — and then sold out in less than two hours. Things kick off in San Francisco at Moscone West on June 11th and you can be sure we'll be there live. (Yes, we'll be back for Google I/O a few weeks later.) WWDC had, in the

It's financials season again and as usual Apple is leading the way with some bombastic numbers.

past, meant the unveiling of a new iPhone, but like last year we're not expecting one this time around. There will surely be plenty of other fun surprises to keep us interested, though.

Microsoft, meanwhile, decided that the week before WWDC would be a good time to unveil the Release Preview of Windows 8. This version should, naturally, be closer to the final release of the OS than the current Consumer Preview that we looked at back in February. The official, actual release still isn't due until October.

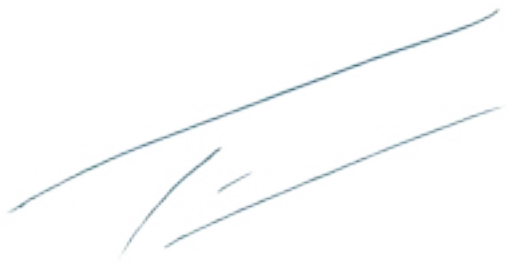
That's when we're hearing RIM's savior may arrive, with rumors circulating this week courtesy of *N4BB* that the first BlackBerry 10 device will be shipping to consumers by October, after an August unveil. It's too early to tell for sure, but we certainly have to hope that a BB10 phone doesn't come any *later*.

One device that we can expect rather sooner is Samsung's Galaxy S III. The company has been teasing it an awful, awful lot lately and we've seen a few comprehensive-looking photos already. It's presumably set to be unveiled at a May 3rd event that we will, of course, be bringing to you live. Sammy has already said that the phone will use its new Exynos 4 Quad processor that, if you couldn't tell by the unnecessarily repetitive name, offers four cores. It's a 1.4GHz chip that is 20 percent more efficient than its GS II-powering predecessor. I can't wait for our battery rundown results.

Spare a thought for the noble HTC EVO 3D. It was at the forefront of the glasses-free 3D smartphone movement — a movement that, ultimately, never materialized. It's no longer available online and soon will be disappearing from stores, too, making way for the vastly superior but predictably two-dimensional EVO 4G LTE.

Another 3D device is suffering, too: Nintendo's 3DS. Sagging sales of the handheld cost Nintendo a $460 million loss in the first quarter, leaving the company to do something against its very nature: start selling hardware at a loss. Nintendo always strives to profit on its systems, a rarity among console manufacturers, and this change shows just how hard times are for the house that Mario built — and perhaps how much the company is banking on the Wii U.

In this week's Distro we'll give you our impressions of Google Drive, along with Spotify on Android. Dana Wollman reviews ASUS' compellingly priced Transformer Pad TF300 tablet while Myriam Joire takes on T-Mobile's flavor of the HTC One S and Joseph Volpe fends off LG's Viper. Brian Heater gets you access to the Navy's robotics lab, Richard Lai sits down with MSI co-founder Jeans Huang, Ross Rubin tackles a stickier side of Kickstarter and Ludwig Kietzmann answers the question of what happens to the writers in a script-free game like *Journey*. There's more Recommended Reading, a new IRL and another great comic from Box Brown. I'm exhausted just typing all that, so relax yourself before diving in for another healthy edition.

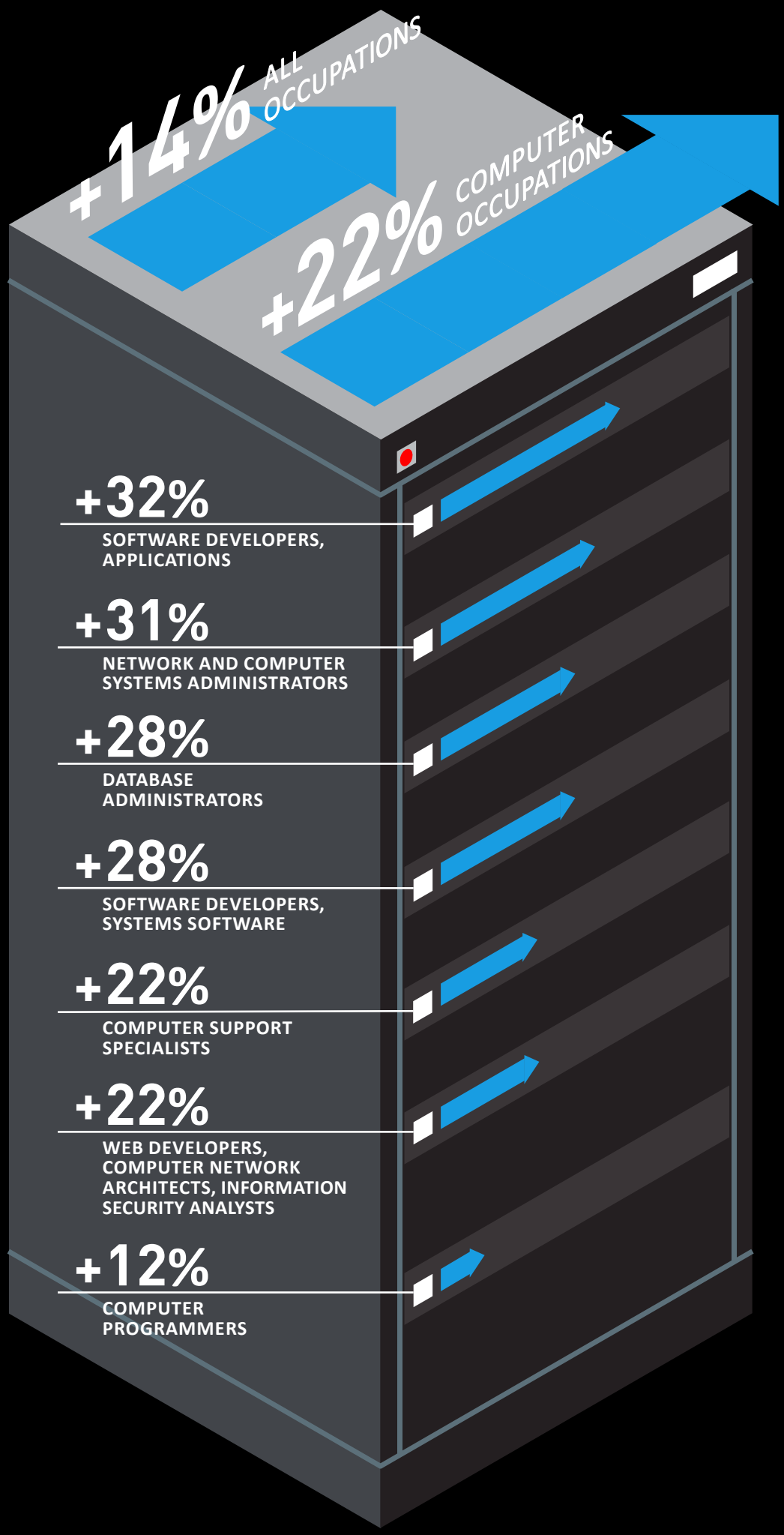


TIM STEVENS
EDITOR-IN-CHIEF,
ENGADGET

Tech Jobs to Get Big Boost by 2020

Based on a recent projection by the US Bureau of Labor Statistics, employment opportunities defined as "computer occupations" are expected to grow at an above average rate of 22 percent by 2020. That's quite a bit above the 14-percent average growth for occupations on the whole. With increasing demand in areas such as wireless and mobile networking, e-commerce and financial transactions, as well as the healthcare industry's increased expansion into the digital realm, the need for skilled database and systems administrators, software developers, information security analysts and many others is on the rise. In an ironic turn of events, however, there's a predicted decline in these same computer jobs throughout the US electronics manufacturing sector. *—Jon Turi*

PROJECTED CHANGE IN EMPLOYMENT (2010 - 2020)



SOURCE: U.S. BUREAU OF LABOR STATISTICS, EMPLOYMENT PROJECTIONS PROGRAM

BIG KICKS, NOT ALL FOR STARTERS

Switched On

BY ROSS RUBIN

The end of last week's Switched On left doubt for the future of dedicated devices that tread on the turf of smartphones. After all, funding is key to every major new product initiative and, despite the vast fortunes of many Silicon Valley engineers that have been accumulated via IPOs and acquisitions, few wish to take on the risk of fronting a new consumer device themselves. (In 2007, the handheld FlipStart PC was hatched from FlipStart Labs, funded by Vulcan Ventures, the investment arm of Microsoft co-founder Paul Allen.)

Most venture capitalists abhor the device business; it is a rare device that makes it to the spotlight of startup debutante balls such as DEMO, TechCrunch Disrupt or Launch. Even most of the 94 companies at CES' Eureka Park were not developing end-user devices. Where then, can a device entrepreneur go for funding and pick up some publicity in the process?

Whereas eBay started off about buying stuff that people had and Etsy is about buying stuff that people have made, Kickstarter has become about buying — or at least pre-ordering — stuff other people want to make. And while there are still scores of creative projects ranging from renovating old theaters to funding a first album or music video to be found, the site has high potential to become a premiere window for tech gadget debuts.

The project that has attracted the most funding in Kickstarter's history, the e-paper-based, iPhone-compatible Pebble smartwatch, is on track to pass $6 million soon with most of its campaign time ahead of it. In its first few days, it surpassed the third-most funded Kickstarter project, a simple well-constructed iPhone dock that raised nearly $1.5 million, blowing past its initial funding goal of $75,000. And while many Kickstarter projects are intended to aid initiatives that can't

Ross Rubin (@rossrubin) is executive director and principal analyst of the NPD Connected Intelligence service at The NPD Group. Views expressed in Switched On are his own.

Increasingly, "reward tiers" for certain Kickstarter projects are essentially becoming pre-orders.

be easily distributed, that's certainly not the case for gadgets. Increasingly, "reward tiers" for certain Kickstarter projects are essentially becoming pre-orders. In requiring every contributor to pre-order the Pebble watch at $119 (with a $99 offer for the first 200 backers), the company has attracted more than 40,000 customers or, as Kickstarter calls them, backers.

The team behind Pebble has benefitted from some degree of luck, but it hasn't exactly been beginner's luck. Prior to designing the Pebble watch, the team created the InPulse watch. Indeed, there has been some controversy as to whether Kickstarter is straying from its grassroots to become merely a way for companies to use pre-orders to save on development costs. The developers of the Tiltpod, for example, went to Kickstarter for a quick hit to create an iPhone version of their diminutive camera-steadying device. And Sanho, a longtime creator of the HyperDrive field photo backup system as well as other peripherals, tapped the community to fund a product called CloudFTP that it had been showing at media events. While the funding project for PicoProject — a small popup screen for use with pico projectors raised a low percentage of its funding target. Nonetheless, the website for the product confidently predicts that pre-orders will start at the end of April with delivery to retailers in August.

There's nothing wrong with offering those who wish to put money up front a bit of a discount. And established companies launching projects on Kickstarter may even create a halo effect as they attract attention. However, those just looking to goose their bottom line on a gadget they were planning to launch anyway dilute from the notion of Kickstarter's "all or nothing" funding philosophy. Stripped of the drama of a funding campaign, the site might as well just be a store that offers pre-orders.

Building a Better Robot

As a lead engineer for the US Army's Armament Research, Development and Engineering Center, Naomi Zirkind develops algorithms for more intelligent robots. In 2007 she was pictured with an explosive ordnance disposal (EOD) bot at the Picatinny Arsenal.

Photo: Erika Larsen / Redux

JEANS HUANG

MSI's Co-Founder on the Company's Origins and Banking on a Robotic Vacuum

THE MSI BRAND should be no stranger to connoisseurs of desktop motherboards, graphics cards and gaming laptops, but did you know that this Taiwanese company started off as a computer terminal maker 26 years ago? We sat down with the very likable Senior Vice President (R&D Division) Jeans Huang, to discuss the company's origins, the frank reasoning behind MSI's reluctance to enter the smartphone market and his thoughts on 3D displays for PCs.

Let's talk a bit about the history of your company first. Our readers probably want to know what it takes to start a big company like MSI, starting from zero all the way to where you are now. Can you talk about how it happened and where you found your friends?

Actually, MSI was founded in 1986, about 26 years ago. Originally we had a total of five founders. Before we founded this company, we were trained at the same company in Taiwan: Sony. We've been working together for a long time so we were very good friends. And 26 years ago, the PC industry was just in the early stage, but we had very good technical experience at Sony, because at the time we were designing terminals.

Actually, terminal technology was more sophisticated than PC because the system was completely designed by ourselves. The PC's original design is by IBM, whereas the terminal was completely new — from the spec to implementing the schematics, so many things had to be provided by ourselves. Many computers come from IBM mainframe, Wang, NCR and so on. Those were very big computers, but at the time we thought this kind of [PC] concept should be possible, instead of the mainframe in the vision; and today, it has already happened.

Mr. Hsu, who is our chairman, thought this was a very good opportunity, so he invited some good friends (me, Frank Lin, Henry Lu and Kenny Yu). It was pos-

sible to found this company because at the time we were just single. [Chuckles]

How old were you by the way, if you don't mind me asking?

Ah it's OK. I was born in 1958, so now I'm 50-something; but 25 years ago we were so young. Because we were not yet married, that meant we could work very hard and not care about any financial issue. Even with a very small income, we could very easily get by with it.

So just five people to begin with?

In that time just five people. We founded in August 6th or 16th, but in October... in that stage, Taiwan had a very famous electronics show in October, so we must prepare our host product to show there within just two months. That included the schematic design, layout and implementing, the components, and in that time, all the components were using TTL (transistor-transistor logic), very small components. Now all the components are integrated into the IC, but at that time, no, so we must install those components by hand by ourselves. So every day we worked very very hard, but we enjoyed it a lot. And we were very happy because we were very good friends at the time.

And why join the show?

Because we could collect the most customers at the show. This was a new business, so most of the customers there were trying this market. We bet on this space during its slow growth. Originally we just worked on the motherboard. Even currently notebooks also have a motherboard inside, so the motherboard actually is very important in this industry. You should find that our current products like the motherboard, VGA, desktop, AIO, notebook, server; all product lines are based on this technology.

MSI now has an Android tablet and two Windows 7 tablets. Do you see tablet computing as the future?

Actually, MSI made its first tablet nine years ago. As I remember, the model number was MS-2832 (aka PenNote 3200). It was based on the x86 Windows-based architecture. In that time, the weight was maybe around 1.2 to 1.3 kilograms, the battery life was maybe 1.5 hours only and with very poor performance. Our new one (WindPad 110w) we can make the weight be under 0.85 kilograms with good performance, and the battery life is at least five to six hours.

On Windows, of course, we can make it much longer, but the weight... we'd have to put a very big battery to support it. So how to make the balance? For a tablet the weight is the most important, and battery life also is very important. Then there's performance. For graphics, it can support DirectX 11. It belongs to the very good, high-end graphics category. And CPU also: it is dual core, not single core. So actually, for most people, it is already sufficient. So I believe the time is coming, especially the pricing. As I remember, our first product, the 2832, was sold for more than $1,000. Now, this product maybe less than $600. So the performance is

much better, but the cost is much lower.

Personally, I try to use the tablet at home. After I use the tablet frequently, I don't carry my notebook back home. Actually, most of the things like reading the mail, browsing the web, playing a little game... *Angry Birds*!

Yeah, *Angry Birds*. It's already good enough.

Obviously, MSI hasn't entered the mobile phone market yet. Is this something you're considering? Do you see much potential there?

We have actually surveyed this market around seven years ago, but finally, we gave up because there are so many bigger, stronger competitors like Nokia, Motorola and Samsung. In this business, frankly speaking, the technology is quite different to our core completeness, so that's why in that time we gave this one up. And even now, we still don't think this one is for our near future.

I BELIEVE THE PC INDUSTRY SHOULD BE MORE AGGRESSIVE THAN SMARTPHONE COMPANIES.

Frankly speaking, in Taiwan, HTC is one of our most successful companies. How can we join this market? [It took HTC] Maybe just two to three years only. So I don't [know] who can win this market — it's all decided by who can make more innovation, can provide a good product, good production completeness and service, and marketing. Marketing, everybody can do it. For telco companies, they have more advanced competition. Good relationship with telco operators [is important]. But [the task of] tackling the market, I don't believe it belongs to the telco operators — there are so many retail channels. Who benefit more in the area? I don't think it's the telco companies. They sell smartphones and get rich? I don't think so. So it's decided by who can provide a good product to them. So that's why I don't [know] who will be better in the market — it just depends on who can [be more aggressive].

From me personally, I believe the PC industry should be more aggressive than smartphone companies. Because, you know, MSI is one of the key manufacturers, number four or five in the PC industry. I believe we are very aggressive. Just to mention like ASUSTeK, they also are very aggressive.

So going back to the PC market: MSI has made a few 3D gaming computers, so do you think 3D is the future for desktop computing or even laptops?

For 3D, at MSI we released this kind of product maybe two or three years ago. In that time we adopted two solutions: one is shutter glass, and the other one is passive. With shutter glass you must wear the glasses. If you spend a long time watching [that] content... personally I try to use it and test, and I don't think it's good. Maybe for some special con-

tent you can enjoy it, but for long-term use I don't think it is a good product. So, for 3D, I believe it should be without any glasses. I believe glassesless should be the real product for 3D. I think it's not so easy at this stage because you need a very good refresh rate in the LCD to support. With the current technology, it still needs time to fix this issue.

What do you think is the best product at MSI?

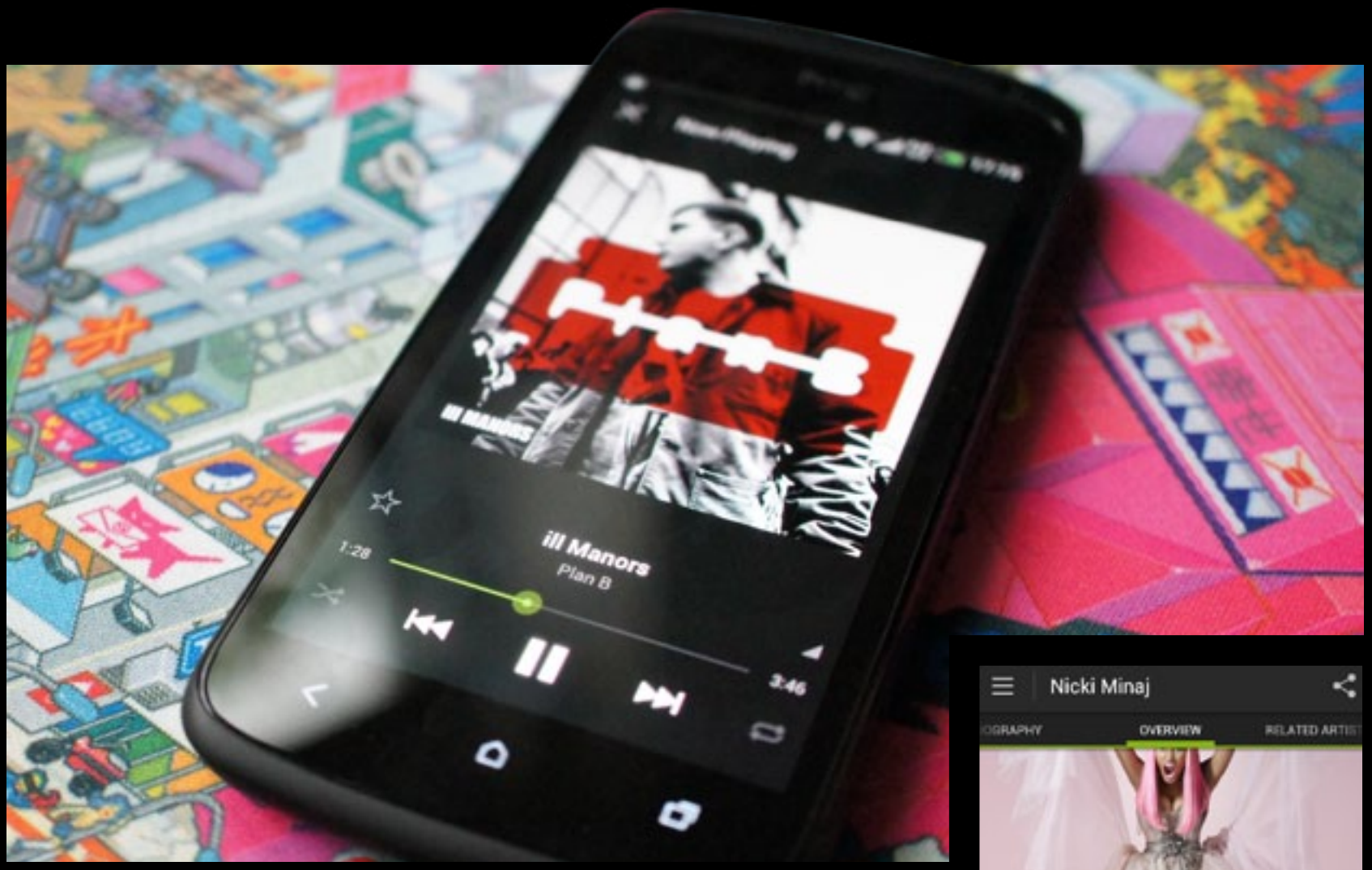
For notebook, gaming I think, because it is one of our main focus products, especially like the GT780 series, we really listen to many gamers suggest what spec they need, and we base on this opinion to implement this model. So, for notebook, I think this one should be a very good product for us. Of course, the AIO is one of our very good product lines with very good reputation. For motherboards we have some very good competition products, especially, you know, military components. It's not so easy to get the Department of Defense...

The United States of America?

Yeah. It proves our products' reliability is very good. Also, we have a completely new product: the cleaning robot. We built this product using technologies from our robot team, which has been around since seven or eight years ago. You may think it's very easy, but in some artificial intelligence, I think it's not so easy. So that's why this product, I hope, can create another business, separate from PC.

HANDS-ON

Our firsthand impressions of just-announced and soon-to-be-released devices

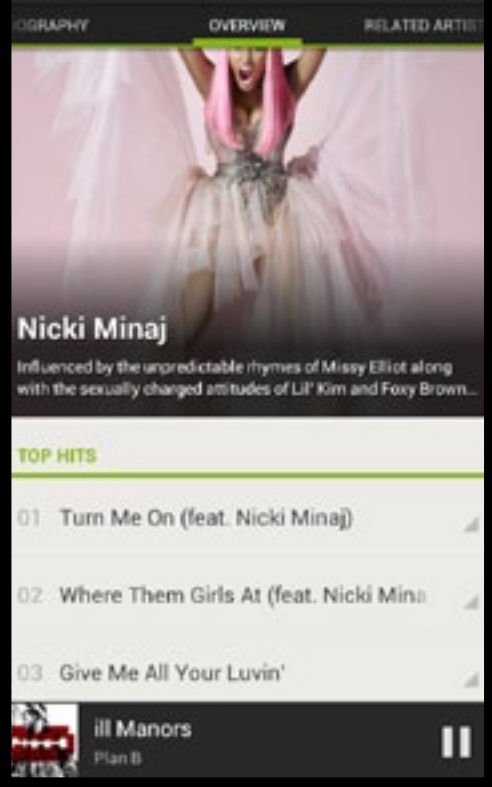


NEW SPOTIFY FOR ANDROID PREVIEW

PRICE $9.99/month
AVAILABILITY
Now Available

THE BREAKDOWN The preview addresses our gripes with improved navigation.

In case you hadn't heard, Spotify's finally given its Android app the update love it deserves. For us, the lock-screen player is already our favorite addition. There's now no need to potter through a locked-down wallpaper and reload the app just to skip a track. Tapping play within the app didn't thrust us to the Now Playing window — we remained exactly where we were. Artist pages are eminently more navigable, as we were able to swipe between screens easily. We suffered no crashes here, unlike the existing version, which has died on us during syncing on more than one occasion.



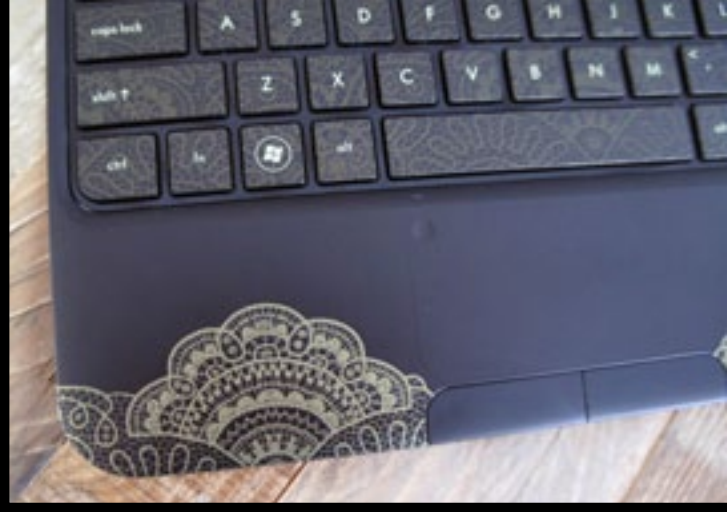
HP PAVILION DM1 BY ALEXANDRE HERCHOVITCH

PRICE $630

AVAILABILITY
Exclusive Through QVC

THE BREAKDOWN This designer laptop gets a golden touch and a $230 price increase.

Outfitted by Brazil's Alexandre Herchcovitch, it features all the specs you'd expect from a dm1z except it's been gussied up to resemble a gold frock from the designer's collection. This marks the first time HP's let one of its guest laptop designers alter the texture on the interior as well. In this case, that means even the keycaps have a rough, almost snakeskin-like texture, just like the lid and underbelly. HP also took the opportunity to clarify that this will retail for $630 exclusively through QVC. That's not cheap — the unadorned dm1z starts at just $400 with the same specs — but it's hardly the $1,800 price we were expecting.



MIT'S ARDUINO-POWERED DRUMTOP

PRICE N/A
AVAILABILITY
Still in Prototyping

THE BREAKDOWN An Arduino-powered drum machine that gets down with the help of household objects.

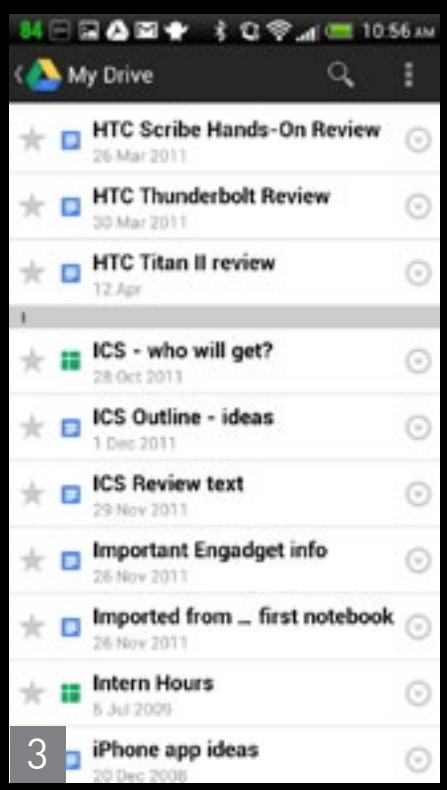
The prototype we toyed with includes eight pads, which are effectively repurposed speakers that tap objects placed on top, with an FSR sensor recognizing physical pressure and turning it into a synchronized beat. There's also a dial in the center that allows you to speed up or slow down the taps, presenting an adjustable tempo. DrumTop is more education tool than DJ beat machine, serving to teach youngsters about the physical properties of household objects, be it a coffee mug, a CD jewel case or a camera battery. But frankly, it's a lot of fun for folks of every age.

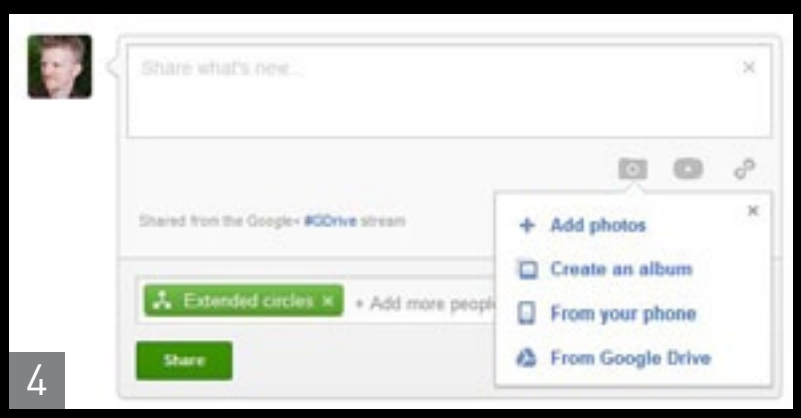
GOOGLE DRIVE

PRICE
Free and Paid Plans
AVAILABILITY
Now Available

THE BREAKDOWN
Google says this is only the beginning and it's got a long way to go, but it's off to a respectable start.

It's been a long time in the making, but the once-mythical cloud storage service known as Google Drive has made its official debut. As it turns out, Google's had much grander plans for Docs. Ultimately, that's really what it is so far: an evolved version of Docs with new sharing, integration and developer features. After the free 5GB of space, you can purchase 25GB up to 16TB on a monthly basis. The SDK is available to everyone who wants to add a dose of happiness to projects and web access alongside desktop and android apps keep files handy.





1) One Drive for all
2) The Drive browser interface
3) Drive for Android
4) Sharing Drive files via Google+

joystiq

JOURNEY WITHOUT WORDS

Reaction Time

BY LUDWIG KIETZMANN

I'm not sure I've seen anyone describe *Journey* as a well written game. It's praised as an earnest, emotionally stirring masterpiece, and a subtle success that nearly denigrates other games just by existing alongside them. But the topic of writing in games is often confined to scripts, spectacle and whatever is said in a cutscene, and *Journey* doesn't have any of that. If you completed it, you'll probably agree: There are no words.

As I wandered through an orange-hued desert, coming dangerously close to outright frolicking, I noticed a figure striding into distant view. Here I met another nameless nomad, and one that shared my appreciation of tasteful, unfettered fabrics. A friend? Another traveler compelled to reach the mysterious obelisk at the center of the world? "Would u like 2 work 2gether," he said in a text bubble. "I know how 2 get 2 the mountain and beat the game."

Okay, that absolutely did not happen, and if it did it would ruin the story. Aside from an innocent, sonar-like ping, there's no communication between online players in *Journey*. We used that pulse to suss out secret spots for one another, or to find each other if an exciting downhill dune slide separated us. We were friends, discovering a world that perfectly oscillates between trepidation, wonder and fatigue during the course of the game.

Alas, after our long trek through the sand and air, my friend ventured too close to an

Ludwig Kietzmann is the Editor-in-Chief of Joystiq.com. He's been writing about video games for over 10 years, and has been working on this self-referential blurb for about twice as long. He thinks it turned out pretty well.

It's like there's a whole, untapped spectrum in which games can talk to us.

edge and was swallowed whole by a frigid crevice before I could warn him. Or maybe he got disconnected, or left to make dinner. That's a detail I don't care to append to the story. I braved the final ascent up the mountain alone, and it felt lonelier, more grueling and more tragic than I could have expected.

That's a story, implicitly told by a game that appears to have no writing, or any traditional capacity to communicate a plot. *Journey* succeeds where others fail because its firmly ensconced in the medium, and knows exactly how to talk to its players – quietly. With most other games, it's like striking up dinnertime conversation with a marching band.

What we have here is an immense success in communication. It's an ironic wonder that so many games, which start having extremely wordy panic attacks at the mere thought of a player getting lost for two seconds,

aren't more fluent in less obvious language. Games can provide feedback and information in so many intuitive ways, through visuals, sounds, physics, icons, controller vibration and even environmental design. A solemn explorer in a sparse landscape, dwarfed by an inviting tower in the distance, imparts the goal of *Journey* better than a tutorial could.

And all of that is still a form of written creation. The scenario and the visual elements that explain it don't simply fall under "graphics" or "technology." It's a deliberate craft in all aspects, of course, but when it comes to storytelling a game like Journey is just written differently. I wouldn't say better, necessarily — there's good storytelling out there that takes excellent advantage of cutscenes and actors — but different enough to make me consider how much remains unsaid in video games. It's like there's a whole, untapped spectrum in which games can talk to us.

The preponderance of video game plots in critical discussion is what really gets to me. We're all talking about the content of the story, when the crucial, underdeveloped part — the beautiful part that connects you to a designer's vision — is in how that story is conveyed. Plot is important, but it's hardly the only measure of how well a game is written.

If it's our lexicon that's at fault, and we don't have a good way to encapsulate the crossover between writing, structuring and design, it's time we expanded it. We'll need designers and writers to head up that mountain with us, and some fencing to cordon off the treacherous cliffs.

NEW RELEASES FOR THE WEEK OF APRIL 27TH

The Walking Dead: Episode 1
(PC / Mac / Xbox 360 / PS3) $5

Prototype 2
(PC / Xbox 360 / PS3) $60

Core Memory: A Visual Survey of Vintage Computers

Text by John Alderman,
Photos by Mark Richards
Published by Chronicle Books

There's a lot more to look at than read in this one, but both parts are well worth spending some time with, and make the book a great addition to the coffee table of anyone with a bent towards computer history. The vintage computers on display here are truly that — *vintage*. While there's a few offerings from the early days of desktops and "portables," the majority of the book focuses on the real behemoths of computing — from the Z3 Adder and ENIAC of the 1940s through the JOHNNIAC of the 50s to DEC PDP-8 of the 60s and the CRAY supercomputers of the 70s. They may all now be less powerful than the phone in your pocket, but they remain as striking as ever, and occupy an important place in history that shouldn't be forgotten. — *Don Melanson*

AROUND THE WEB

The Lost Steve Jobs Tapes
By Brent Schlender,
Fast Company

The latest and surely not the last bit of history to surface about Steve Jobs, this piece (and a second linked within) is culled from a series of interviews Schlender did with Jobs over the years, and covers both his time in the "wilderness" and his return to Apple.

Get Rich U.
By Ken Auletta,
The New Yorker

There's a lot of intertwined relationships in Silicon Valley, but few quite as big or long-standing as the relationship between Silicon Valley itself and Stanford University. Here, Ken Auletta offers an in-depth look at just how complicated it can be and how it might change in the future.

Carriers Warn of Crisis in Mobile Spectrum
By Brian X. Chen,
The New York Times

Don't let the slightly bland title scare you off — this piece by the *Times'* Brian X. Chen (also accompanied by a video) offers a great primer of the oft-discussed issue of wireless spectrum, and attempts to answer the question of whether there's really enough to go around or not.

Valve Handbook for New Employees
Joystiq

We featured a piece written by a Valve employee last week and, as chance would have it, this week saw the leak of Valve's rather remarkable *Handbook for New Employees*. Our friends at *Joystiq* confirmed that it is the real deal, and chimed in with their own commentary on it.

HTC One S for T-Mobile

T-Mobile wisely didn't mess with a good thing: the One S on Big Magenta is as gorgeous and capable as the global version, and assumes the throne as T-Mo's newest flagship.

BY MYRIAM JOIRE

A couple weeks ago we got to have our Ice Cream Sandwich and eat it too, thanks to a gorgeous couple phones from HTC — the One X and the One S. Both run Sense 4 — a thinner, lighter version of the company's polarizing UI — and together with the entry-level One V, represent HTC's attempt to make a comeback after a lackluster year of me-too products. The first to make its way to the US is the One S which landed at T-Mobile April 25 for $199 on contract (with a $50 rebate). We just spent a weekend with Magenta's new flagship handset. So how does it compare to the global One S? Read on to find out.

Hardware

T-Mobile's One S is almost cosmetically identical to the bluish grey SIM-free version we just reviewed. Other than the carrier's logo replacing HTC's branding on the glass above the screen and below the earpiece, you'd be hard-pressed to tell the two phones apart. The pair are equally handsome, beauti-

fully made, almost as thin as Motorola's Droid RAZR (7.8mm vs. 7.1) and pleasantly light (4.22 ounces). For better or for worse, HTC's black, plasma-heated micro arc oxidation (MOA) finish with red accents isn't making it to T-Mobile.

Of course, the handset features the same mid-range 4.3-inch qHD (960x540) Super AMOLED (PenTile) display under Gorilla glass. Likewise under the hood, you'll find a dual-core 1.5GHz Qualcomm Snapdragon S4 processor with

1GB of RAM and 16GB of built-in storage (of which 12GB are user-accessible). The tri-band 42Mbps HSPA+ radio's been tweaked to support AWS for T-Mobile (2100 / 1700 / 900MHz, vs. 2100 / 900 / 850MHz) and the aluminum unibody includes an additional antenna cutout below the capacitive buttons.

Performance and Battery Life

Our biggest concern when testing a carrier-branded device — and comparing it to its unlocked variant — is with the often detrimental operator-mandated customizations made to the software and baseband firmware. In terms of performance we're happy to report that our T-Mobile One S review unit feels every bit as snappy as our foreign model. The benchmarks confirmed our seat-of-the-pants feelings, with matching scores across the board — the T-Mobile's One S is still one of the fastest phones we've ever used.

Battery life on T-Mobile's One S is similar to — if not slightly better than — what we recorded on its global stablemate. Our video loop rundown test came in at nine hours and 10 minutes, which is a slight improvement. Calls sounded loud and clear, but 42Mbps HSPA+ performance was a mixed bag. While we saw peak speeds of 10.6Mbps down and 3.6Mbps up, we sometimes achieved better results with our 21Mbps-only Galaxy Nexus HSPA+ and found that T-Mobile's Galaxy S II consistently outperformed the One S in the same location.

T-Mobile provided the following statement regarding the HSPA+ speeds we experienced:

> *During your review of the HTC One S, you may have noticed speeds inconsistent with your past experience on our HSPA+ 42 network. These are not the speeds consumers will experience — your pre-launch device needs to be provisioned today to provide access to T-Mobile's HSPA+ 42 network. This provision will be active on consumer devices at launch.*

Camera

Photography fans rejoice. T-Mobile's One S features the same fantastic 8-megapixel camera as its foreign twin (and the HTC One X), complete with backside illuminated sensor, f/2.0 autofocus lens and ultra-speedy capture. We're still longing for a dedicated two-stage shutter key to lock focus and exposure, but whether you're taking pictures while recording 1080p video at 30fps (in stereo with

continuous AF), snapping HDR shots or stitching panoramas, the One S delivers. (For sample images, see our original HTC One S review in issue 35.)

Software

While T-Mobile's One S and its global sibling both showcase HTC's much improved Sense 4 skin running on top of Ice Cream Sandwich (Android 4.0.3 to be exact), the carrier's made a few minor changes. Fortunately, these don't adversely impact the user experience. The most jarring departure from HTC's slick One brand and design vision is Magenta's gaudy startup / shutdown animations and accompanying jingles. In addition, the network status indicator's been reprogrammed to show 4G (aka "faux-G") for HSPA+ (instead of H), and 2G (instead of E) for EDGE.

The handset comes preloaded with a dozen apps beyond HTC and Google's own — many of them operator-specific. Sadly but predictably, most of them cannot be uninstalled. T-Mobile certainly isn't the only carrier that's guilty of this, but we'd really like to see an end to this practice. Magenta's bloatware includes 411 & More, Game Base, Mobile Hotspot,

Music Hub, My T-Mobile, T-Mobile Mall, T-Mobile Name ID, T-Mobile TV and Visual Voicemail. Amazon, Dropbox, Lookout, Polaris Office, Slacker Radio, *Where's My Water* and Zinio round up the list of bundled apps.

WiFi calling's another (welcome) T-Mobile addition and it's conveniently baked into the settings. Interestingly, no tethering plan's required to activate the hotspot functionality, but connected devices are redirected to a landing page until the feature is added to your account. Keep this in mind if you're planning to unlock T-Mobile's One S and use it on another network — you'll likely have to root the phone to remove this hotspot restriction.

Wrap-Up

Don't mess with a good thing — that's clearly, wisely and rightfully the approach T-Mobile chose to follow when minting its own version of HTC's One S. There's no doubt this handset is the carrier's new flagship, a crown previously held by Magenta's Galaxy S II. If you can't afford the HSPA+ version of the Galaxy Nexus, $199 subsidized (after rebate) buys you a state-of-the-art Android smartphone that combines strong branding, refined design and a top-notch user experience. Now, can we have a One S with an HD or non-PenTile display, please?

Myriam was born wearing combat boots and holding a keyboard; moments later she picked up a soldering iron. She's been stomping, typing and hacking ever since.

BOTTOMLINE

HTC (T-Mobile)
One S

$199 on contract

PROS

- Refined design
- Excellent camera
- Good battery life
- Brisk performance
- Sense 4 is unobtrusive, lightweight

CONS

- Other flagships offer crisper, higher-quality displays

T-Mobile wisely didn't mess with a good thing: the One S on Big Magenta is as gorgeous and capable as the global version, and assumes the throne as T-Mo's newest flagship.

Review

ASUS Transformer Pad TF300

The second-gen Transformer is a clear improvement over the original, and is the best 10-inch, mid-range Android tablet you can buy right now.

BY DANA WOLLMAN

It doesn't feel like a year has passed since we reviewed the original ASUS Transformer and its innovative keyboard dock, but indeed time flies, and quite a bit has happened since then. The company has released the Prime, for starters, followed by two other high-end models. And now, the OG Transformer is going the way of the dodo, as the affordable new Transformer Pad 300 (aka the TF300) takes its place. Though this newest tablet was announced back in February, it's only just going on sale in the US this week, starting at $379 for the 16GB version, and $399 for one with 32GB of built-in storage.

In addition to the fact that this replaces a truly memorable prod-

uct, the TF300 is intriguing because it represents an even better deal for consumers: it borrows some design cues from the higher-end Prime, and also steps up to a similar 8-megapixel camera. Like the Prime, too, it runs an unskinned version of Android 4.0 and packs a quad-core Tegra 3 chip — something you don't often see in a tablet this price. In short, the main differences between this and the Prime are battery life (10 hours versus 12), and the quality of the display (the 10-inch screen here offers 350 nits of brightness instead of 600). Those all sound like reasonable trade-offs and, frankly, they are. That's our abridged review, over and done with in just two paragraphs, but read on if you're craving a *little* more detail.

Hardware

Think of it as a watered-down Prime. Make no mistake: the TF300 shares some overarching design language with the original, so even now that there are several Transformers on the market the lineup still feels cohesive. Even so, with a starting price at $379, the company naturally chose to hold back some of the flourishes that make the Prime worth the premium. After all, ASUS needs to give you *some* reason to splurge on the top-shelf model, right?

THINK OF IT AS A WATERED-DOWN PRIME.

For starters, that spun back is now made of plastic, not metal, so although it *looks* like the Prime and Zenbook line, the build quality isn't quite as impeccable. Meanwhile, the body itself has widened to .38 inches (9.7mm), up from .33 (8.4mm) on the Prime. As for weight, the TF300 tips the scales at 1.39 pounds, compared with 1.28 for the original. None of that's saying much, though: even with those dimensions, the TF300 manages

to be slimmer than the new Galaxy Tab 2 10.1 and Acer Iconia Tab A200, two similarly priced tablets that measure .41 and .49 inches thick, respectively.

As for weight, the TF300 is heavier than the 1.29-pound Galaxy Tab 2 10.1 and its big brother, the Prime. For what it's worth, though, it offers roughly the same runtime as the A200, which weighs a fifth of a pound more. We haven't yet tested the second-gen 10.1, so we can't yet speak to its battery life, but suffice to say its lighter weight won't be such a boon if the battery inside can't last as long as some of its heftier competitors.

So what do all of these stats amount to? A damn good mid-range tablet, we say. No, this isn't as rock-solid or tantalizingly slim as the Prime, but if you were willing to spend $500 on a tablet, you would have already, ya know? Compared to the $399 Tab 2 10.1 and $350 A200, the total package here is slightly more sophisticated, though we've also got kind things to say about the muted finish on the 10.1, and the non-slip backing on the A200. Oh, speaking of sophisticated, the tablet we tested had a dark blue backing, and that's indeed the version you'll see on sale starting this week. Eventually, it'll also be available in more playful red and white hues, but you'll have to wait until June for those to hit shelves.

Before we move on to how the tablet actually performs, let's take a short tour around the device, shall we? 'Round back, of course, you'll find that 8-megapixel auto-focusing camera, paired with a 1.2-megapixel one on the front. If you're looking for the power / lock button, you'll find it on the top landscape edge, leaving it easy to press even when the tablet's nestled in its keyboard dock. The volume rocker and micro-HDMI socket sit on the upper left side (assuming you're holding the thing in landscape), with a microSD slot located further down on that left edge. On the right, there's nothing but the requisite 3.5mm headphone / mic jack. The bottom edge — the one that connects to the optional keyboard dock — is home to three connectors, including the 40-pin charging slot that works with the included AC adapter.

Inside, the device is home to all the usual radios and sensors, including Bluetooth 3.0, a gyroscope, e-compass, aGPS, an ambient light sensor and a G-sensor, with either 16GB or 32GB of internal storage. And no, for those of you who are wondering, we didn't encounter any problems with WiFi or GPS, like some Prime owners, though these are admittedly the kinds of issues real-world owners might stumble across after an extended honeymoon period.

Display and Sound

Like the Prime that came before it (and

	POWER SAVING (600MHZ-1GHZ)	BALANCED (1.2GHZ)	PERFORMANCE (1.2-1.3GHZ)
Quadrant (v2)	2,062	3,695	**3,886**
Linpack single-thread	38.94	41.70	**46.59**
Linpack multi-thread	56.61	**89.83**	87.55
NenaMark 1	34.2	**60.3**	**60.3**
NenaMark 2	34.3	**46.9**	**46.9**
Vellamo	980	1,320	**1,397**
SunSpider 0.9.1[1] (ms)	2,815	**2,120**	2,175

Notes: [1] Lower numbers are better

pretty much every other 10-inch tablet on the market), this guy has a pixel count of 1280 x 800. The difference, though, is that while the original Prime has a 600-nit Super IPS+ display, the TF300 has a brightness level of 350 nits and is "merely" IPS. (We *know*, right?!) If you're working indoors, with the tablet plugged into the keyboard dock, that drop in brightness shouldn't bother you, though if you're parked outdoors you might find the viewing angles are narrower than what you'd otherwise get on the Prime. Still, with the brightness pushed to the max (a luxury you can afford, given the robust battery life), you should have little problem glancing at your email on the go or framing shots in the camera app.

Even if you don't end up buying the dock, it's simple to follow along with a movie while the tablet's resting flat on a table (or airplane tray) in front of you. (Keep in mind, though, that the speaker's located on the back side, which means the tablet's otherwise loud, balanced audio will sound muffled if you rest the thing face-up.) Really, the main drawback seems to be that this 350-nit panel doesn't do as good a job as the 600-nit one in countering sun glare.

Performance and Graphics

Like the Prime, the TF300 packs 1GB of RAM and a quad-core Tegra 3 processor, though this chip's clocked at a slightly lower speed (1.2GHz versus 1.3). If you care, the memory type is now DDR3 — an improvement over the OG Transformer. Once again, ASUS has programmed three different power modes (balanced, power saving and performance), and depending on which you choose the chip can be overclocked to 1.3GHz or throttled down to as low as 600MHz. So what do these feeds and speeds translate to, anyhow? Superlative benchmark scores, for starters. Though it doesn't quite best its big brother (and why would anyone expect it to?), it steamrolled its similarly priced, similarly sized competitors in every benchmark we threw at it.

	ASUS TRANSFORMER PAD TF300 ($379)	SAMSUNG GALAXY TAB 2 7.0 ($250)	ACER ICONIA TAB A200 ($350)
Quadrant (v2)	**3,695**	2,840	2,053
Linpack single-thread (MFLOPS)	**41.70**	37.10	37.20
Linpack multi-thread (MFLOPS)	**89.83**	61.30	60.40
NenaMark1 (fps)	**60.30**	57.60	45.60
NenaMark2 (fps)	**46.90**	30.40	20.40
Vellamo	**1,320**	978	1,290
SunSpider 0.9.1[1] (ms)	**2,120**	2,239	2,251

Notes: [1] Lower numbers are better

Notice, too, that the TF300 notches a particularly wide lead in graphics tests like NenaMark. NVIDIA's put a lot of marketing muscle into demoing games on Tegra 3, and has seen to it that tabs like the TF300 come pre-loaded with a title or two designed to showcase its rendering prowess. Indeed, we noticed nary a hiccup as we fled monkeys in *Temple Run*, and the screen was also responsive as we swiped up to jump and down to slide under overgrown tree trunks. And if we do say so, that loud speaker allows for some crisp sound effects (that is, until the person next to you on the train stink-eyes you into muting those monkey shrieks).

Still, a quad-core chip isn't necessarily a shortcut to flawless performance — and neither is Ice Cream Sandwich, for that matter. Particularly when we first started playing with it, we noticed delays as we tapped on apps, and the display didn't always seem to hear our fingers calling. (For what it's worth, we never once suffered an app crash.) All this improved quite a bit after we rebooted the device for the first time, but even then we waited patiently through a lag here and there. In particular, web browsing is a bit disappointing: when you zoom in on text or images, you'll almost always notice some white tiling before everything scales as it should. Even the benchmark scores hint at that: though the TF300 takes the gold medal in SunSpider and Vellamo, it wins by a much narrower margin than it does in other categories.

A QUAD-CORE CHIP ISN'T NECESSARILY A SHORTCUT TO FLAWLESS PERFORMANCE — AND NEITHER IS ICE CREAM SANDWICH.

Rest assured that if you settle for that median performance mode you won't be taking much of a performance hit, if

any. Our graphics scores between the balanced and performance modes were similar across the board, which means there's not *that* much incentive to switch to the maximum settings, especially if balanced mode holds the promise of longer battery life.

Battery Life

According to ASUS, the 22Wh juicepack inside the TF300 can last through up to 10 hours of active use. In our standard rundown test, we managed eight and a half hours of video playback before the tablet finally gave out. Altogether, that's not as impressive a showing as the Transformer Prime, whose 25Wh battery lasted 10-plus hours in the same test — and that's despite the fact that the Prime has the overhead of a brighter display. Admittedly, of course, our video playback test is taxing, not least because we fix the brightness at 50 percent. With less intense use (read: more idle time) we eked out closer to 12 hours, and that even included some video playback.

This time around, the dock, too, has a smaller battery than what you'll get with the Prime (16.5Wh versus 22Wh), which should amount to an extra five hours of runtime.

Dock

Some things don't change. This Transformer, like every other we've reviewed, works with a keyboard dock that doubles as an extended battery, adding an extra five hours of runtime, in this case.

TABLET	BATTERY LIFE
ASUS Transformer Pad TF300	8:29 / 12:04 (keyboard dock)
Samsung Galaxy Tab 7.7	12:01
Apple iPad 2	10:26
ASUS Eee Pad Transformer Prime	10:17 / 16:34 (keyboard dock)
Samsung Galaxy Tab 10.1	9:55
Apple iPad (2012)	9:52 (HSPA) / 9:37 (LTE)
Apple iPad	9:33
Pantech Element	9:00
Motorola Xoom 2	8:57
HP TouchPad	8:33
Barnes & Noble Nook Tablet	8:20
Lenovo IdeaPad K1	8:20
Motorola Xoom	8:20
Acer Iconia Tab A200	8:16
Samsung Galaxy Tab 7.0 Plus	8:09
Lenovo ThinkPad Tablet	8:00
Amazon Kindle Fire	7:42
Galaxy Tab 2 7.0	7:38
Archos 80 G9	7:06
RIM BlackBerry PlayBook	7:01
Acer Iconia Tab A500	6:55
T-Mobile Springboard (Huawei MediaPad)	6:34
Toshiba Thrive	6:25
Samsung Galaxy Tab	6:09

The dock is also home two full-size ports — a USB 2.0 socket and SD slot — giving you two more ways to shuttle files between your tablet and computer. The most important thing to know, though, if you're new around these parts is that the Transformer doesn't exactly live up to its name out of the box: the dock is sold separately for $150.

For better and worse, the engineering here hasn't really changed, so if you already own a first-gen Transformer and are wondering if you should upgrade, you can *probably* get away with skimming this section. For newcomers, though, we'll say this: the keys are serviceable, but we don't recommend buying the tablet and dock and expecting them to add up to a laptop replacement. The keys have a flimsy, precarious feel to them, and are at the disadvantage of having been shrunk to accommodate a 10-inch screen. We've also found that the speed of word entry is limited by the tablet, so even though your hands might fly across the keyboard, you'll still notice a slight delay as letters start to appear onscreen. In terms of the typing experience, then, we'd recommend this about as much as we would a netbook: it's enormously handy for pecking out URLs, web searches and short messages, but we wouldn't suggest composing your 15-page term paper (or even 4,000-word review) on it.

The truth is, though, even a netbook probably has a sturdier keyboard panel than this — not to mention, sounder ergonomics. ASUS hasn't done anything to remedy the off-kilter weight distribution, so when the tablet is docked it can still tilt backwards if you're not careful (this is especially true if you're working with it in your lap). For what it's worth, the tablet fits into the dock with a reassuring *click* and the combined setup feels quite durable, even if the underside of the dock is prone to surface scratches.

THE DOCK IS HANDY FOR PECKING OUT URLS, BUT WE WOULDN'T SUGGEST COMPOSING YOUR TERM PAPER ON IT.

Ironically, though, we enjoy the dock's small, multitouch trackpad more than the touchpads on a lot of the laptops we test. Paging up and down or side to side is a no-fuss affair, and the buttons are tactile, if a bit noisy. The pad isn't quite spacious enough for pinch-to-zoom, however, and indeed the trackpad doesn't support it; you'll have to double click to zoom in, or just reach up and perform that gesture on the screen. Once you get over the feeling that you're "supposed" to use the trackpad for scrolling and zooming, it can actually be quite liberating to mix keyboard, mouse and touchscreen input, depending on what's convenient.

For first-time buyers, there's no reason to consider a dock other than this one, the one that was fine-tuned to fit the TF300's particular dimensions. But folks thinking of retiring their OG

Transformers might be curious to see if they can save that $150 by slipping their new, state-of-the-art tablet into an older, but still good enough dock. ASUS has an answer ready for you, and we're afraid it's not what you want to hear: the TF300 is not backward compatible with the original dock or USB cable. It should go without saying that the new dock isn't 100 percent simpatico with the Prime or OG Transformer either, since the TF300 dock was designed specifically to cradle the 300.

Software

Though manufacturers like Samsung and HTC are having a field day customizing Ice Cream Sandwich, ASUS is sticking to a different strategy: loading up its tablets with a stock version of Android 4.0.3, and peppering it with a few extra apps and widgets (all uninstallable, fortunately).

As for those pre-installed apps, the list includes Amazon's Kindle reader; App Backup (along with the separate App Backup & Restore); App Locker for password-protecting applications; a shortcut to get *Glowball*; ASUS MyCloud, My Library and MyNet; Netflix; Photoshop Express; SuperNote; *Temple Run*; the Zinio magazine store; and a shortcut to the games section of TegraZone (we were being dead-serious about NVIDIA's marketing clout, folks). Users also get 8GB of free lifetime ASUS WebStorage, which is a twist over the way ASUS treated the OG Transformer (in that case, customers received unlimited storage, which was only free for the first year).

Camera

In addition to industrial design, another key way in which the TF300 takes after the Prime is in image quality. Now, the basic Transformer tablet has an 8-megapixel, backlit-illuminated CMOS sensor with an f.2.2 lens. That's not hugely different from

the Prime's 8-megapixel sensor and f/2.4 lens, except the Prime also has an LED flash for lower-light shots. Even so, this makes for a welcome improvement over the 5-megapixel camera included on last year's model. And though megapixels aren't everything, it also has the potential to trump the 3-megapixel shooter on the Galaxy Tab 2 10.1, which also doesn't have a flash. And we're *definitely* comfortable saying this is a better deal than the $350 Acer Iconia Tab A200, which for a similar price has no rear camera at all, and isn't even necessarily thinner or lighter for lack of that extra hardware.

For better and worse, the camera performs similarly to the one on the Prime. Here, too, you can tap to focus, and the camera does an admirable (though not necessarily quick) job of honing in on the detail of your choice. We did take some issue with the color rendering: some shades look undersaturated, while other shades got lost in translation. Some red begonias, for instance, were actually magenta, if our resulting pictures are to be believed. On the bright side, the flash-less camera holds its own in dim (but not necessarily *dark*) settings.

This generation of the Transformer also records 1080p video at 30 fps. Fortunately, we experienced none of the dropped frames that we did when we first tested the original: the quality here is relatively light on motion blur, and the audio capture is intelligent enough to catch subtler sounds off camera, like passerby's conversation. In our video test, we could hear a stranger off-camera expressing amusement (or horror?) at a mannequin in a store window — a kind of detail that might have been drowned out by wind noise had we been recording with a lesser device.

Configurations, Accessories and the Competition

The TF300 starts at $379 for 16GB of storage, with the 32GB model fetching $399. (Side note: why can't all manufacturers charge just a small premium for doubling the internal storage?) In addition, ASUS is selling some accessories (no, we're not really counting the namesake dock here): the VersaSleeve (it is what it sounds like), a micro-HDMI-to-VGA dongle, an external USB adapter and a 4-in-1 memory card reader — you know, in case you want an SD reader, but don't want to buy the $150 dock to get it.

IT SEEMS OBVIOUS THAT THE TF300'S QUAD-CORE CHIP PROVIDES A REAL ADVANTAGE IN TERMS OF GAMING, LONGEVITY AND OVERALL SPEED.

Of course, we're getting a bit ahead of ourselves. We're assuming you're choosing this particular tablet. And in case you couldn't tell, we'd heartily agree with your decision if you did, though for anyone who's been holding out for

a not-too-expensive Android 4.0 tablet, no reason not to see what else is on the menu. The beautiful thing for anyone shopping right now is that there seems to be an uptick in reasonably priced 10-inch tablets. We're thinking of the Galaxy Tab 2 10.1, which at $399 isn't quite the top-shelf product the first-gen 10.1 was. Ditto for the $350 Acer Iconia Tab A200, one of the first affordable ICS tablets we saw this year. Even the iPad 2 has seen a price cut to $400, but we still maintain first-time iPad buyers are best off paying the extra $100 for the new iPad, if only to get that crisp Retina display. If an iPad's your speed, then, you're probably not seriously considering an Android tablet and likewise, not all shoppers want to be wed to Apple's ecosystem.

Anyhow, for those of you who prefer Android, you've got at least three solid options at the ready. And the truth is, we've enjoyed our time with all of them, though the TF300 offers faster performance and longer battery life than either of these two contenders, both of which make do with last year's dual-core Tegra 2 SoC. For what it's worth, the Acer Iconia Tab A510 will have Tegra 3 when it ships, but at $450 for the 32GB model, it'll cost fifty bucks more than the 32GB TF300, and will also have lesser camera and display specs. It's biggest saving grace, though, might be that its battery life is rated for 12 hours, which, if accu-

rate, would trump almost everything else in its size and price range.

Though we're not normally inclined to make a recommendation based purely on benchmarks, it seems obvious that the TF300's quad-core chip provides a real advantage in terms of gaming, longevity and overall speed. Factor in the decent camera, slightly more polished design, clean Android experience, nice app selection and the useful dock, and you've once again got yourself a good deal.

Wrap-Up

Though the TF300's price is fairly low, there thankfully isn't that big of a catch. Even as more mid-range, 10-inch Android tablets start hitting the market, the second-gen Transformer still feels like the best deal, with smooth, Tegra 3-powered gaming, good endurance and an understated design that calls to mind ASUS' *other* Transformer, the $500 Prime.

Aside from the fact that the battery life isn't quite as epic as the Prime's, our most serious complaint has little to do with ASUS, and more with Android: even with a state-of-the-art chip running the latest version of the OS, the tablet occasionally hiccups when launching apps and resizing web pages. There's no reason for a product with such strong tech credentials to stumble over the mundane stuff. Still, the tablet is eminently usable, and ultimately a pleasure to live with. Moreover, the performance is a clear improvement over what you'll get from similarly priced 10-inch tabs, many of which run on last year's dual-core Tegra 2 chip. So if you feel at home in Android and have about $400 to spend, this, friends, is the tablet we recommend.

Dana Wollman is Reviews Editor at Engadget, a marathoner, lover of puns and a native Brooklynite.

BOTTOMLINE

ASUS
Transformer Pad TF300

$379+

PROS

- Polished, understated design
- Great graphics performance, thanks to Tegra 3
- IPS display offers wide viewing angles

CONS

- Some performance hiccups
- Battery life not as epic as on the Prime
- Optional keyboard dock scuffs easily, still isn't that comfortable to type on

The second-gen Transformer is a clear improvement over the original, and is the best 10-inch, mid-range Android tablet you can buy right now.

LG Viper 4G LTE

Even without a live LTE network, Sprint's first 4G device is a smart budget buy for current Sprint subscribers content with the state of their 3G service.

BY JOSEPH VOLPE

They said it wouldn't last. And they — pundits, analysts, bloggers, GSM fanatics — were right. WiMAX, that flavor of 4G found in the 2500MHz band, has proven to be more of a hindrance than help during Sprint's transition from underdog to reinvigorated titan. Then there are the kerfuffles it's endured standing on the sidelines — namely, watching one-time LTE partner LightSquared squander its regulatory good graces. Beleaguered would be putting it mildly; Sprint faces a treacherous climb uphill to the mobile Olympus

BENCHMARK	LG VIPER 4G LTE	PANTECH BURST	GALAXY S BLAZE 4G
Quadrant (v2)	3,031	3,189	**3,600**
Linpack (single-thread)	44.3	**50.1**	44.5
Linpack (multi-thread)	72.9	**80.6**	75.4
NenaMark1	**61.9**	56	55.9
NenaMark2	**55.8**	53	55.3
Neocore	**61.7**	56.2	55.3
SunSpider 0.9.1 [1]	2,952.80	**2,692**	3,068
Vellamo	**1,226**	1,151	1,009
Battery life (LTE)	4.8 hours	7.5 hours	**11.3 hours**

Notes: [1] Lower is better

where Verizon, AT&T and now-spectrum-rich T-Mobile sit — after all, it's hard to change the tide of public perception, overcome the limitations of a dreadful 3G CDMA network and move away from weak third-party 4G signals. Yet, with all of those negatives working against it, a planned rollover to LTE technology might just be the panacea Sprint has so badly needed.

Right now, at least, a wish and a hope are all Sprint can dole out to existing subscribers toying with the idea of switching carriers. Its nascent LTE network, currently in testing across six US cities, hasn't been cleared for launch, which makes its first 4G handset, the Viper 4G LTE, a dress rehearsal of sorts. And what a low-key affair it is: no cutting-edge aesthetics or kickstand here, just mid-range specs and a humble design made from recycled materials. But for anyone itching to surf those faster waves, LG's dual-core, NFC-enabled workhorse could be a tempting at $100 (with a two-year contract). So will the dangling carrot of faster 4G persuade consumers to choose this over all those other mid-tier Android phones? Let's find out.

Hardware

Almost every time we've handed someone the Viper, we've been greeted with initial recoil, followed by resigned dismay. It makes you wonder if LG put this phone in front of a focus group before sending it along to retail shelves. At 0.46 inches thick, it certainly cuts a striking figure, just not in the way most consumers would want. Had the Viper been put on a diet, it could've approached decently likable status. Instead, this clunker is saddled with a chassis so engorged that you'd expect Sprint to bundle it with a mini in-home

4G LTE cell tower just to accommodate its capaciousness.

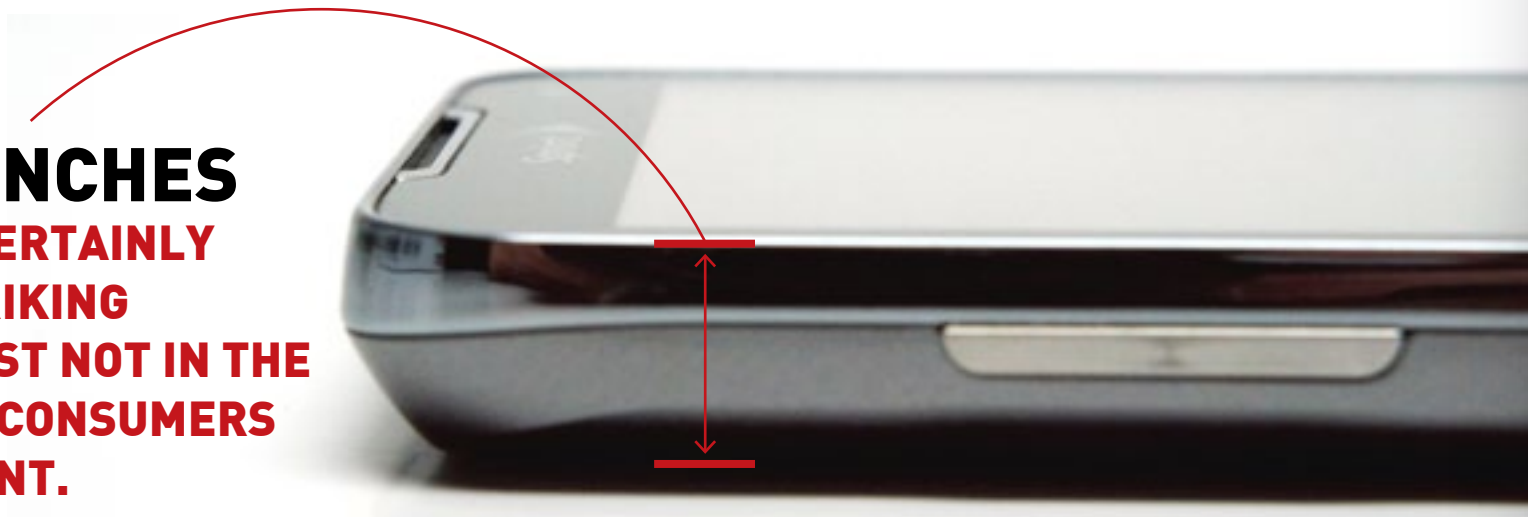
Will that matter to users scraping by on their purse strings, eager to experience speeds similar to what AT&T and Big Red are offering? Not likely, to be totally honest. The faux-metal brushed casing (it's actually 50 percent recycled plastic) is home to LG's logo and a 5-megapixel module with a single LED flash. That chintzy back curves up to the screen where it's met by a silvery border. The 3.5mm headphone jack and power button sit on the top edge, while the volume rocker and micro-USB socket reside on the left — an arrangement that frees up the remaining real estate, giving the phone a somewhat sterile feel. Peel off the casing and you'll find an NFC chip embedded in the shell, as well as a 1,700mAh Li-ion battery and microSD slot, which comes stuffed with a complimentary 4GB card.

Shrouded in a black bezel is that 4-inch (800 x 400) NOVA display, flanked by a Sprint logo, VGA camera, metallic-trimmed earpiece and four capacitive Android buttons. Curiously, those navigation keys don't stay lit for very long, so you'll have to become quite familiar with their layout if you want to carry on with your daily routine, uninterrupted. For what it's worth, the screen is readable from a variety of angles, though you might encounter some distracting glare. And for the more accident-prone among Sprint's subscriber base, the Viper also benefits from a Gorilla Glass coating, keeping its face (mostly) free from scratches.

Performance and Battery Life

Stock Gingerbread on an Android handset was a much clamored-for breath of fresh air back in mid-2011. Now, it just smacks of something old, a second-hand cast-off lacking the refinement, visual uniformity and software optimization ushered in with Ice Cream Sandwich. Thankfully, an upgrade to Android 4.0 is on the way, though LG and Sprint aren't committing to an ETA. That's not to say the two companies haven't added their own spices to the UI — some subtle signs of skinning (read: a different camera app and Sprint's ID packs) are present.

AT 0.46 INCHES THICK, IT CERTAINLY CUTS A STRIKING FIGURE, JUST NOT IN THE WAY MOST CONSUMERS WOULD WANT.



Though our experience with the device was often pleasant, transitions can start to feel irksome after a while: instead of that swooping animation used for a switch between app drawer and home-screen, LG gussied the Viper up with a gradual dissolve that quickly escalates from elegant to annoying. Yes, it's a pretty embellishment, but it also contributes to a feeling of perceived slowness, even though the phone is actually the opposite: powered by a dual-core 1.2GHz MSM8660 chip and 1GB of RAM, this handset proved more than capable of quickly switching between apps.

To give you a fair sense of how the Viper stacks up alongside similarly specced budget offerings, we pitted it against AT&T's LTE-enabled Pantech Burst and T-Mobile's Samsung Galaxy S Blaze 4G. All three run a version of Qualcomm's Snapdragon S3 SoC, although the Viper is clocked 300MHz lower than its dual-core 1.5GHz brethren, so bear that in mind as you look over those mixed benchmark results. From a raw processing standpoint, LG's handset takes a firm backseat to its contenders, coming in dead last in Quadrant, SunSpider and Linpack single- and multi-thread. Where graphical prowess is concerned, however, it charges to the head of the class, toppling the competition with consistently higher frame rates.

Even when limited to Sprint's 3G network, web surfing within the native Android browser is a relatively painless affair. Full desktop pages render in under 20 seconds and pinch-to-zoom performs

admirably, tracking our finger movements with only a slight loss in detail.

A product sold on the back of a phantom service? Meet the Viper. Without the support of Sprint's forthcoming 4G LTE network, LG's handset is forced to sit alongside the other 3G products currently staffing Sprint's CDMA lineup. So, while we'd like to tell you how it'll perform with that specific radio tuned into those next-gen waves, we can't — there's no available signal here in New York City to test.

What we can attest to is the longevity of its battery while in EVDO-only mode (you can enable or disable this in the settings menu). Under the stress of our standard rundown test the handset lasted four hours and 49 minutes. That's with brightness set to 50 percent, WiFi and GPS enabled, Twitter syncing at 15-minute intervals and one push email account active. With light to moderate use, you should be able to force the phone past the 24-hour mark, especially if you opt for more conservative settings.

Network Speeds

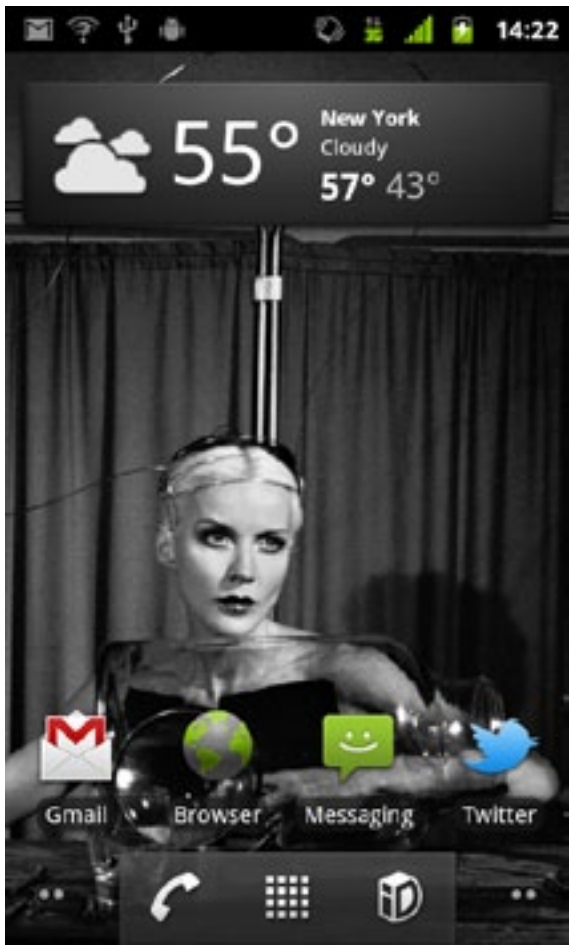
GSM carriers here in the US have long trumped their CDMA counterparts in terms of speed. Even so, anyone familiar Sprint's 3G network should know not to expect fast rates, which is precisely why subscribers might be tempted by the promise of LTE. Sadly, without that live 4G network, the phone is at the mercy of Sprint's lackluster EVDO speeds. Around New York City, which is blanketed in 3G coverage, we saw download and upload speeds max out at 1.3Mbps and 0.90Mbps, respectively, with the average hovering between 0.15Mbps to 1.05Mbps down and 0.21Mbps to 0.86Mbps up. In areas where signal penetration was relatively weak, we waited with increasing aggravation for a 2MB app to download and install. Things could change mid-year when Sprint flips the switch on its repurposed radio waves, but for now, consider yourself warned.

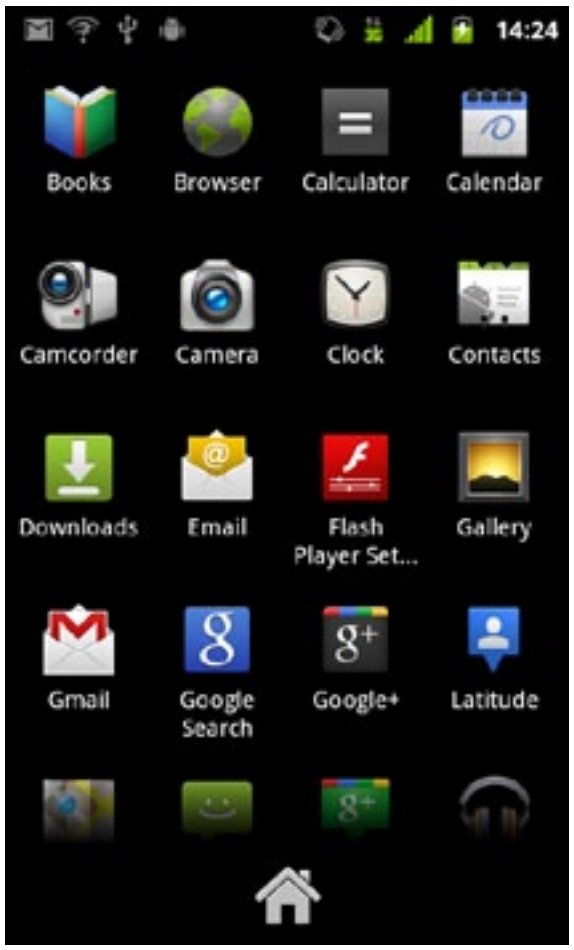
Camera

In a bid to seem different, LG's outfitted the Viper with its own camera app, putting a shred of distance between it and all those other Gingerbread handsets. Users won't be disappointed with the customizations on tap, nor will they be incredibly amazed — it offers all of the features we've come to accept as standard on modern smartphones. While you don't have the option to tap-to-snap, you can highlight an area on screen to focus in on your intended subject. We do have one minor gripe with the app, and that's the lag between shots.

THE VIPER DOES STAND APART FROM OTHER NON-NEXUS DEVICES IN ONE IMPORTANT WAY: NFC AND GOOGLE WALLET.

On the whole, the handset's 5-megapixel module delivers image quality that's just above average. It's no replacement for a point-and-shoot, but pictures do display an impressive level of detail within a shallow depth of field. Still, those finer points become less distinct — fuzzy, even — as that distance





widens. Color reproduction comes across somewhat muted even when the selected scenery is awash in direct sunlight. You'll still be able to manage a decent collection of photos, but for more exceptional imaging you'll need to seek more expensive pastures.

For a handset positioned toward the middle of the spectrum, the Viper possesses some features more in line with what you'd expect to find in premium phones — namely, the option to record video in full 1080p HD. We tested out the device's recording capabilities and, as it performed with stills, so too with video. Once again, colors appear dull and the overall image quality is slightly grainy and shaky, though the decent frame rate means you won't see any stutters or drops in the footage. Audio playback was remarkably crisp and discernible, even when we camped out between two major lanes of traffic in downtown New York City.

Software

Not much new can be said about Android 2.3, especially when LG's opted for a mostly vanilla flavor. As we noted earlier, a much needed update to ICS is on the way (once it passes carrier testing), but for now, you'll have the pleasure of December 2010's best Google OS. Despite its staleness, the Viper does stand apart from other non-Nexus devices in one important way: NFC and Google Wallet. Not only does this device join the exclusive rank of other oft-used, tap-to-pay phones, but priced at an affordable $100 on contract, it could help get Mountain View's stalled payment system into wider acceptance.

Vanilla Android is as vanilla Android does and crammed in alongside the

usual suite of native Gapps are, of course, Sprint's own load of bloatware, taking the form of first and third party apps like NASCAR, Polaris Office, Sprint Music Plus, Sprint NBA Mobile, SprintZone, TeleNav and Sprint TV & Movies. Fans of pristine app drawers won't be able to uninstall this lot, but they will have the option to disable those offending applications.

Wrap-Up

A 4G LTE phone for $100 on contract? It's hard to argue with that. No matter how unattractive the design or antiquated the software experience, the Viper is a wise buy for frugal consumers and Sprint loyalists alike. It's not as if the handset's internals aren't up to snuff — they are — and whenever Hesse & Co. manage to roll out that Ice Cream Sandwich update, the phone is sure to see some appreciable performance boosts. No, the only major con working against it is the abysmal real-world speeds delivered by the carrier's 3G CDMA network. If you've been wed to Sprint for some time and can deal with its current state of pokiness, then by all means, hang on, upgrade your device and stay tuned for that 4G coverage.

For anyone else not tied to the carrier and looking to swap services, we'd stay focused on other, cheaper budget options running on live, widely deployed LTE networks. Verizon has a host of sub $99 handsets readily available like LG's Viper twinner, the Lucid for $80 or even Pantech's Breakout at $50 on contract, both running along what is arguably the strongest, next-gen network. Need to drop the price bar even lower? At just a penny with a two-year agreement, bargain hunters will want to check out the Burst on AT&T — a real no-brainer as purchases go. Clearly, then, you'll have no dearth of options, especially at this price point. The only question that remains is: Should you buy into what Sprint's not yet selling?

Joseph Volpe is ambiguously ethnic. He is also an Associate Editor at Engadget.

BOTTOMLINE

LG (Sprint)
Viper 4G LTE

$100

PROS

- NFC and Google Wallet
- Mostly stock Android
- Reasonably fast performance
- Tempting price

CONS

- Ships with dated Gingerbread OS
- Unappealing design

Even without a live LTE network, Sprint's first 4G device is a smart budget buy for current Sprint subscribers content with the state of their 3G service.

MSI GT70 Gaming Laptop

One of the first Ivy Bridge machines to hit the market, the GT70 proves Intel's latest Core processors and NVIDIA graphics are a match made in gaming heaven.

BY SEAN BUCKLEY

Now that Intel's let the cat out of the bag (and into the Ivy), it's high time we took a look at what manufactures are going to *do* with those fancy new processors. Behold: The MSI GT70 gaming laptop, one of the first gaming beasts out of the door with Intel's next generation architecture. Living up to its next-gen CES promises, this 17.3-inch behemoth falls squarely in the desktop replacement category, at 8.6 pounds, and packs a new 2.3GHz Core i7-3610QM processor, NVIDIA's lat-

For all its bells and whistles, the GT70 is an unassuming beast.

est GeForce GTX 670M chip with 3GB of video memory, 16GB of DDR3 RAM and a fancy RAID 0 dual SSD setup — all wrapped in one hefty, formidable package. So how powerful a combination do Ivy Bridge and NVIDIA make? Let's find out.

Look and Feel

MSI's latest rig boldly models the gargantuan proportions we've come to expect from high-end desktop replacements, weighing in at 8.6 pounds spread over a 16.85 x 11.34 x 2.16-inch frame. The stalwart machine follows the standard "large laptop" shape — that is, bulky in the back, tapering down to a (comparatively) thinner front edge. Crowning the notebook is a dark brushed aluminum lid, framed by a matte black band. Its hinge sits above a pair of stereo speakers and a fairly standard-looking control bar. Amid the display, power and WiFi toggles that normally crowd the keyboard deck, there's also a special turbo button that promises "one-touch overclocking," along with a "cooler boost" toggle that makes the unit's fan spin faster.

A pair of standard USB ports share the machine's right edge with a buttonless, tray-loading optical drive. Eject button? Take a look at that control bar one more time — you won't be opening this drive bay by mistake. The rig's left side mirrors the right with a large vent, a trio of USB 3.0 ports, an SD card reader and a quartet of analog jacks: headphone, microphone line-in and line-out. Up front, the machine flaunts a single row of indicator lights: Bluetooth, WiFi, battery, sleep and disk activity. A duo of HDMI and VGA outputs can be found on the back edge, accompanied by an eSATA socket, Ethernet jack and the all-important AC port.

For all its bells and whistles, however,

The touchpad avoids many of the pitfalls common to other portable rigs.

the GT70 is a rather unassuming beast, with a simple black interior that matches the outside. Red accents underlining the trackpad and that touch-sensitive control bar are the only embellishments MSI dared to include. The dark, industrial edges are a nice departure from some of the flashier machines on the market, and lend the GT70 a little gravitas, to boot

Keyboard and Trackpad

The machine's typewriter boasts a "keyboard by SteelSeries" badge, and it lives up to the brand name. Each press is met with a satisfying mechanical *click*. The simple black keys are accented by a programmable multicolored LED backlight, which bleeds out from behind each keycap, dimly illuminating the translucent lettering on each of the keys. The SteelSeries washboard may lack the firm clickity-clack of a full-on mechanical keyboard, but typing on it feels tactile, responsive and free of the cheap, gummy quality that plagues far too many laptops. MSI didn't fiddle much with the standard keyboard layout — a typical QWERTY lineup hogs the majority of the machine's face and is headlined by a row of F1-12 keys, a few function toggles and a starboard number pad. Its only oddity lies in the absence of a portside windows key, a welcome omission for gamers who are all too familiar with the mid-game misclick quit.

Like its companion keyboard, the touchpad avoids many of the pitfalls common to other portable rigs. For instance, its position, south of they center of the typewriter's home row, ensures the pad is out of the way of a typist's furious fingers, making accidental palm-activated cursor jumps unlikely. More importantly, it handles multitouch shortcuts like a pro, easily recognizing and executing gestures without fuss. Like the keyboard, the touch buttons are solid, and not at all mushy. All around, text input and cursor manipulation on the GT70 is refreshing, though the discerning gamer will still want a dedicated mouse for racking up headshots.

If any one piece of the GT70's build falls short of the rest, it would have to be the screen.

Display and Sound

The GT70's Dynaudio sound system is somewhat of a standard for MSI rigs, and for good reason. Loud and clear is the classic, apt description for the capable 2.1 speaker setup. The speakers have enough oomph to easily fill a room without distortion. Game audio and music flow richly from the stereo drivers and the orphaned subwoofer on the machine's underbelly, showcasing a clear left-right differential. Sure, good stereo still won't replace a proper surround sound pair of gaming cans, but it's a boon for lazy headset-free gaming. Of course, a good chunk of this listening experience is dependent on the onboard THX TruStudio PRO software, although it can be nixed for a solid tin can impression. We kept the software on and our ears happy.

If any one piece of the GT70's build falls short of the rest, it would have to be the screen. Sure, its 17.3-inch (1920 x 1080) LED panel looks wonderful head-on, but its viewing angles are regretfully shallow. Sitting one chair off center of the screen betrays a sharp loss in color, and it doesn't take much horizontal adjustment to kill a viewer with contrast. For a standalone, stationary setup, a single user won't have an issue with this, but sharing the screen or using it in a multi-monitor situation (as anything but the primary monitor) could prove to be problematic.

Performance and Battery Life

If you can be bothered to lug the GT70's mighty mass down to your local coffee shop, make sure you have room for a few cups of joe — you could be there awhile. The MSI rig didn't give up on Engadget's standard battery test for almost three hours, a respectable runtime for a 17.3-inch gaming powerhouse. Of course, if your mobile gaming itch calls for something a little more intense than *Minesweeper*, you'll want to keep the rig's power brick handy: NVIDIA's discrete graphics chip falls asleep without a nearby outlet. While the machine's integrated GPU can *technically* run modern games, getting them to run at a playable framerate requires major sacrifices in resolution and visual fidelity.

When you do sit down with that AC adapter, however, you'll be playing with some serious power. Those fancy new processors Intel just unleashed? We've got one right here: the Intel Core i7-3610QM clocked at 2.3GHz (3.3GHz with Turbo Boost). NVIDIA takes up the brawn to the rig's brain with a GeForce GTX 670M and its 3GB of dedicated video memory. We couldn't help but try and push the rig to its limit. Games with "very high" settings simply weren't enough; we had to single out titles that went "ultra." Maxing out the video settings in *The Elder Scrolls V: Skyrim* and *Battlefield 3* snagged us average frame rates of 38 and 25 at the screens native 1920 x 1080 resolution, respectively. The fields of Tamriel's frozen north were certainly playable, but we had to scale back a few settings to keep our modern soldier on the front lines. Similarly, *Grand Theft Auto IV* and *Crysis* (you just *gotta* test Crysis) lingered below 30 fps unless compromises were made. Source games like *Portal 2* and *Team Fortress 2*, on the other hand, blazed at their maximum settings, pushing 90 fps in Aperture's testing labs and 60 while defending the stronghold — both easily breaking the three digit barrier with minor tweaks.

Of course a gaming machine plays games, but how about the day-to-day stuff? Well, it certainly didn't seem to mind the unscientific absurdity of the Engadget workflow: two browsers, each with 15 to 20 open tabs running under Photoshop, word processors and multiple active chat clients. It didn't even seem to mind when we intentionally overloaded twenty of those tabs with streaming video. All fun aside, the GT70 did manage to bench a few notable numbers, and its dual 64GB SSDs in RAID 0

As much as we like the GT70, a lighter-weight rig rocking the same chipset is definitely worth considering.

made sure general navigation was lightning-fast. Although the laptop's 27-second boot / 1.8-second wake times seemed speedy to us, an MSI representative told us our test unit was actually underperforming on the SSD front. Our machine clocked 656 MB/s read and 354 MB/s write speeds in the ATTO disk benchmark, but it's rated to top out at 900 MB/s when properly configured. So as happy as we were, we certainly wouldn't scoff at *faster* solid-state storage.

Earlier we mentioned a "turbo" toggle on the laptop's touch sensitive control bar — this activates the MSI Turbo Drive Engine, a one-touch VGA overclock tool that's supposed to sharpen the rig's already fine edge. While we couldn't get the TDE to bolster in-game performance by more than a one or two frames per second, it *did* kick the rig's benchmark scores up a notch. With the overclock engaged, PCMark rated the GT70 at 14,225; 3DMark06 pegged it at 19,213, jumping its scores by 200 on both accounts — give or take 20 points.

Software

It's a fact of life: if you didn't build your own rig by hand, it's probably going to come with a few pre-installed "goodies" that nobody asked for. The GT70 may not be an exception to this rule, but at least it's not an egregious offender. Yes, it has a suite of multimedia management trialware (MAGIX Photo Manager 9, Music Maker 16 and Video Easy SE, to be exact) that might well go unused, but at least most of the laptop's pre-loaded software is *complimentary*. THX TruStudio Pro, for instance, lets users tweak their speaker output and boost subwoofer gain. Planning to make use of the rig's port side audio jacks? Realtek's HD Audio Manager is on board to help you configure your surround sound digs. There's a LED manager for the keyboard, of course, and a surprisingly robust network manager (Qualcomm Athertos Killer Network Manager) that allows you to prioritize bandwidth by application.

The nearest the GT70 comes to so-called "bloatware" is MSI's signature S-Bar, a visual shortcut dock that hides behind a nondescript icon on the desktop's north end. The dock is fairly lightweight and inoffensive, but its functions mostly mirror actions that can be performed more efficiently with the keyboards Fn key. We'd say it's mostly harmless or even useful, if you're not a fan of hotkeys. Either way, MSI doesn't leave pickier users much to uninstall.

LAPTOP	PCMARK VANTAGE	3D MARK06	BATTERY LIFE
MSI GT70 (2.23GHz Core i7-3610QM, GeForce GTX670M)	14,073	18,955	2:49
MSI GT683DXR (2.00GHz Core i7-2630QM, GeForce GTX 570M)	9,074	16,862	2:40
2011 Sony Vaio F Series (2.20GHz Core i7-2670QM, GeForce GT 540M)	8,116	8,394	2:07
Sony VAIO Z (2.7GHz Core i7-2620M, Intel HD Graphics 3000 / AMD Radeon HD 6650M)	11,855	7,955	4:15
Dell XPS M15z (2.7GHz Core i7-2620M, GeForce GT525M)	8,023	7,317	3:41 / 4:26 (Optimus disabled)
Qosmio X775-3DV78 (2.0GHz Core i7-2630QM, GeForce GTX 560M)	7,900	15,169	1:26
2011 HP Envy 14 (2.3GHz Core i5-2410M, Intel HD Graphics 3000 / AMD Radeon HD 6630M)	6,735	7,214	3:55
2010 HP Envy 17 (1.60GHz Core i7-740QM, ATI Radeon HD 5850)	6,153	10,787	2:10

Configurations

A rig built to match our review unit will set prospective buyers back a cool $2,000, netting them an Ivy Bridge Core i7-3610QM processor clocked at 2.3GHz; an NVIDIA GeForce GTX 670M with 3GB of GDDR5; dual 64GB SSDs configured in RAID 0 alongside a separate 750GB 7200RPM HDD; 16GB of DDR3 RAM; a Blu-ray rewritable optical drive; a 17.3-inch, 1920 x 1080 LED display; and, of course, a two-year warranty. Mouthful? You betcha. Of course, if you don't want (or can't afford) the GT70's flagship configuration, MSI is happy to trim a few specs to save you a buck. Dropping the rig's DDR3 ram down to 12GB and consolidating its dual SSD drives into a single 128GB unit brings the MSRP down to $1,850, while kicking another $150 off the sticker price will cost you 250GB of hard drive space and a step down to a DVD multi-drive.

If you haggle yourself down to the GT70's lower-end configurations, you'll be left with an interesting choice: more storage space, or more real estate? Sure, bigger is better, but in what context? This choice constitutes a model change. The $1,550 variation of the GT70 is nearly identical to its $1,700 brother, albeit without the SSD drive and a slightly larger hard disk (750GB). The GT60, on the other hand, sheds two inches off of the GT70's screen size and nearly a pound of weight, along with one USB 2.0 socket and the gold plated connectors from its audio ports. The trade off? It has twin 500GB 7200RPM HDDs. As much as we like the GT70, a lighter-weight rig rock-

ing the same specs is definitely worth considering. Hard drives and RAM can always be upgraded, after all.

The Competition

If you're looking for a machine to go toe-to-toe with MSI's latest, you may have to wait awhile. Sure, last year's Qosmio X775 packed quite a punch, but its own next-generation successor isn't due for another couple of months. When the X875 *does* arrive, however, it'll cross the Ivy Bridge with the same GPU as the GT70, so we'd say it's a likely contender.

That said, there are plenty of last-generation rigs that just might get price cuts as they make way for new models. The frugal gamer could definitely get by with any number of last year's gaming powerhouses, including MSI's own GT683DXR.

Wrap-Up

While the GT70 wraps itself around the latest technologies, its build impressed us most. The keyboard, trackpad, chassis and speakers all bleed quality, sidestepping so many of the common sins that PC makers commit. This finely crafted icing makes its screaming performance that much sweeter. Yes, we can fault it for its less-than-ideal screen and horrendously loud "cooler boost" fan overdrive, but the straw we're grasping is brittle, and it makes a poor bed. At $2,000, the MSI GT70 isn't going to fit in everybody's budget, but it offers few compromises in exchange. Our only caveat is that it's the first Ivy Bridge gaming laptop out of the gate, and with inevitable price drops and looming competition, it may be worth waiting for the slow and steady to catch up. Then again, if you need to have the latest and greatest *now*, it would be a gross understatement to say you could do worse.

Sean a lifelong gamer, a comic-book nerd, and an Eagle Boy Scout. He also writes for Engadget. What else is there to know?

BOTTOMLINE

MSI
GT70 Gaming Laptop

$1,550+

PROS

- Exceptional keyboard and trackpad
- Killer graphics
- Packs a speedy new Intel Ivy Bridge CPU
- Good battery life for a machine this size

CONS

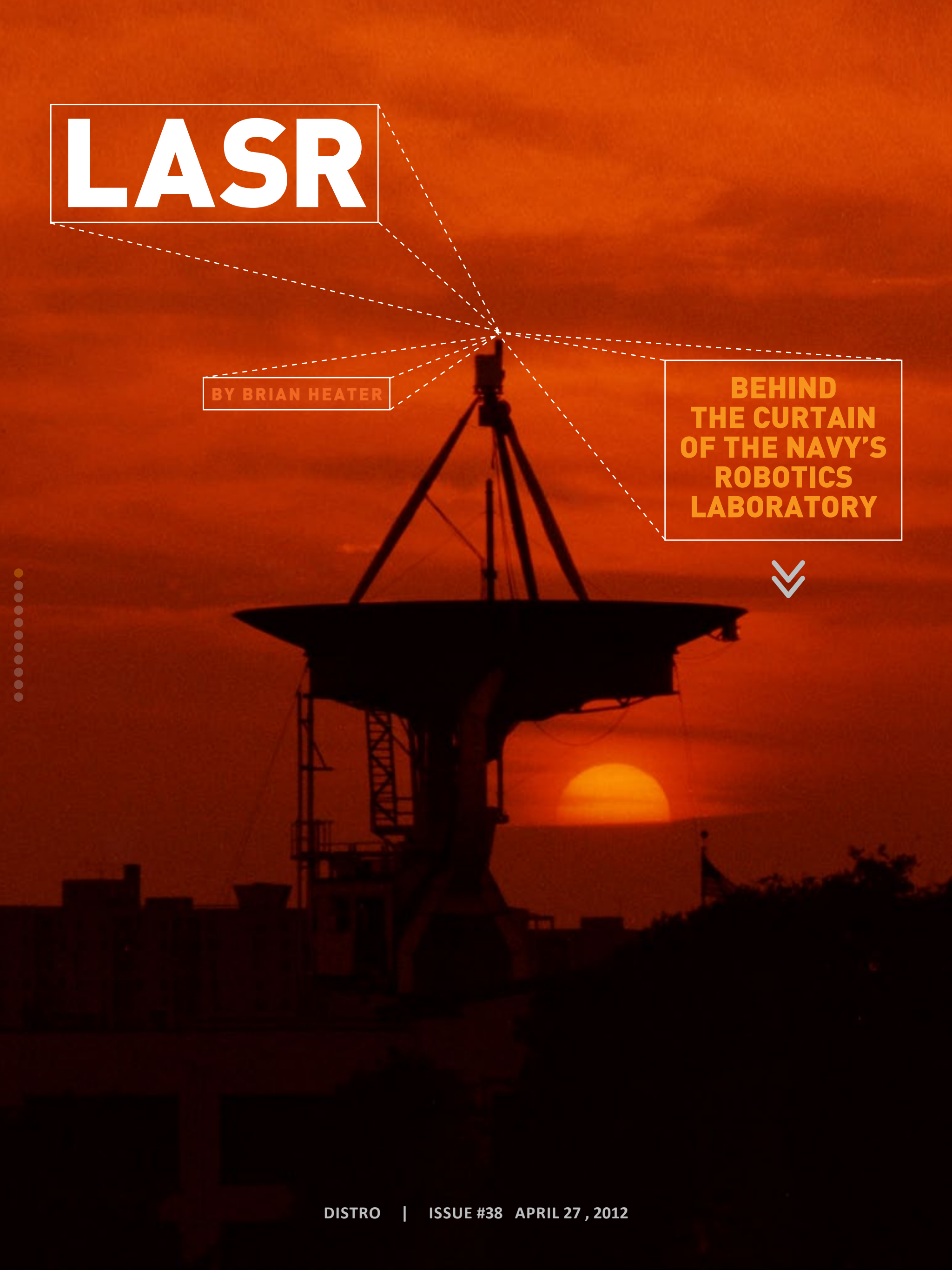
- Narrow viewing angles
- Fan can be exceedingly loud

One of the first Ivy Bridge machines to hit the market, the GT70 proves Intel's latest Core processors and NVIDIA graphics are a match made in gaming heaven.

LASR

BY BRIAN HEATER

BEHIND THE CURTAIN OF THE NAVY'S ROBOTICS LABORATORY



I don't know all that much about the Naval Research Laboratory when I arrive in DC for "the public's first opportunity to look inside" the space's new $17 million Laboratory for Autonomous Systems Research (LASR). I give the cab driver the address, and he casually tells me that it "stinks," illustrating this notion with a universally familiar hand gesture. He means it literally, too — that you can smell the place, simply driving by in a cab, with the windows up. He says this with such assurance, such gusto, that I fully expect it to smell like the city dump. A wall of stink.

OPENER AND SIDEBAR PHOTOS/IMAGES PROVIDED COURTESY OF THE U.S. NAVAL RESEARCH LABORATORY

It's not much to go on, but it's something. And while I can thankfully report that his reaction was a bit overstated — at least on this particular day — there's certainly a distinct odor to the place. It's a sprawling 130-acre complex that sits sandwiched between the 295 freeway and the waters of the Potomac River; a series of nearly identical big, white buildings facing inward toward a grassy courtyard. On the way in, a space with what appears to be crushed cars is visible from the freeway.

In the middle of it all is the giant bust of a man, bronzed and balding, looking a bit worse for wear, sitting atop a white stone column reading, simply, "Edison." It's a tribute to the reason this place exists — yet another feather in the man's already over-accomplished cap. The Navy pinpoints the precise moment of conception as a 1915 interview with *The New York Times*, in which the inventor told the Old Gray Lady that "the government should maintain a great research laboratory." The realization of that vision would come roughly eight years later, with the laboratory using its pre-war resources to pioneer technologies like radar and sonar. The Navy proudly boasts a hefty laundry list of sci-

NRL: MILESTONES OF INNOVATION

1922-39

Invention of US Radar

"Phase distortion" observations lead to the development of the first operational US radar systems, detecting the range and bearing of nearby ships and eliciting cries of "You sunk my battleship!"

1946

Birth of US Navy's Space Program

Repurposing a captured V-2 rocket, the Navy gets a first look at far-UV spectrum images from outside our atmosphere, launching the field of space-based astronomy and capturing the hearts of sci-fi fans everywhere.

entific accomplishments that took place behind these gates — the nuclear submarine, the satellite and GPS all reportedly have roots here. That history is proudly displayed on a wall-sized timeline, and, to drive the point home, all of us will be sent off with a copy of the 10-minute documentary, *The Naval Research Laboratory: A Timeless Journey*.

As we arrive at the tollbooth, one reporter at time, we're greeted by a woman with a clipboard and directed toward what looks to be a repurposed school bus, old and painted white, idling by the curb. According to our Navy-designated tour guide, the organizers were expecting roughly a third of the number of journalists who ultimately responded to its initial solicitation. And, really, who *wouldn't* want to be one of the first outsiders to step foot in a new military robotics lab, even if it means spending a night in some god awful Best Western just off the freeway in Alexandria, Virginia?

After 20, maybe 30 minutes spent sitting on the bus, we're off, rolling roughly 100 yards before we stop and the doors open once again. All in all, the trip lasts about a minute, prompting chuckles from the invited guests. "I guess the Navy won't be going green this year." Ha, ha, ha. We file out onto the sidewalk, like permission-slip-wielding attendees of a grade school field trip, the uniformed adult supervision keeping close watch so none stray too far from the tour route. And indeed, when I excuse myself to use the restroom, a sailor is assigned to show the way, and stand guard outside the door.

For all of this cloak-and-dagger behavior and the Asimovian name gracing the building's white exterior, the front section of LASR is a decidedly mundane affair, a collection of cubicles, filing cabinets and fluorescent lighting. Our naval chaperones huddle us up and break us into groups, sending us through the doors and into a long, white hall — the entry to the facility we'd braved that grueling one-minute bus ride to see. We file past closed-door laboratories and testing facilities, attempting to glimpses through windows as we're shuffled through.

The first stop on the tour is the Desert High Bay, one of three simulated ecosystems housed under the 50,000-square-

LEFT: The smallest of LASR's spaces, the Desert High Bay. **RIGHT:** A robotic arm and mock IED.

foot facility. There's a fourth, the Forest Highland, located behind the facility, though we won't be shown that on our trip, and our tour guide reassures us it's wholly unremarkable, a third of an acre devoted to testing things like autonomous logistic vehicles, a smaller version of facilities set up by the Army and Marines. The High Bays are designed specifically to represent the diverse and oft-unforgiving settings that will someday play host to naval robots.

The Desert High Bay is the smallest of the four spaces. It's also not all that much to look at. Those hoping to stumble into some Willy Wonka-style fantasy world would be sorely disappointed to begin their tour here. It's a fairly standard warehouse room, with off-white walls, gray floors and bright yellow beams running across the ceiling. The centerpiece is a two-foot deep bed of sand measuring 40 feet by 14 feet, butt-

ABOVE: The indoor pool located in LASR's Littoral High Bay.
BELOW: An unmanned undersea vehicle designed to mimic the movement of the bird wrasse fish.

ing up against an 18-foot-high rock wall that looks a fair bit like a climbing structure found in an upscale gym. A yellow stepladder leans up against the edge.

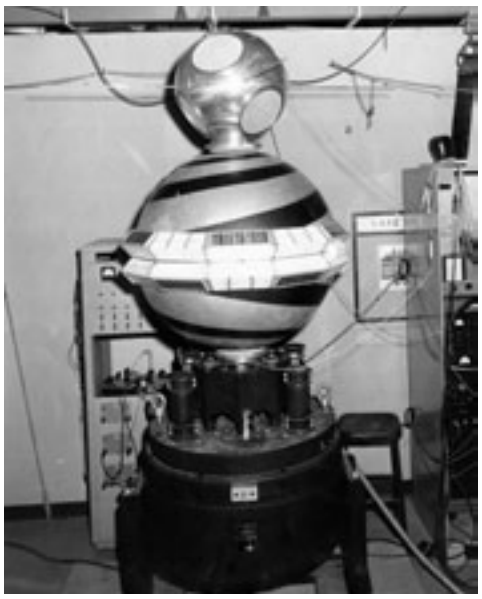
For our tour, a teal robotic arm sits bolted to the top of a three-legged workbench, embedded in the sand. A shovel at the end of the arm gingerly fiddles around an area next to a mock IED, peeking out from the sandbank. A number of thick wires connect the setup to an office computer sitting on a worktable. There are buttons that researchers can press from the exterior, to adjust the lighting or activate fans to simulate a desert sandstorm. Beyond that, there's not all that much customization to be done — no punishing desert heat or mischievous roadrunners.

The Littoral High Bay is a bit more impressive in scope than its desert counterpart — though it isn't much to look at itself. It's a big, cavernous, echoey space with a large indoor pool measuring 45 by 25 feet. The Navy has promised that it will muck up the water in the future with things like mud and gravel, to come a bit closer to the real-world marine conditions the space is designed to simulate.

1955-59

Vanguard Program

We begin our journey upwards with America's first official satellite program, while the flagship Vanguard 1 reaches new heights for a man-made vehicle, harnessing the power of the sun.



1960

GRAB 1 - ELINT Satellite

Galactic Radiation and Background 1 (GRAB), the first operational US electronic intelligence reconnaissance satellite is launched, and paranoiacs around the world are finally granted some validity.

The pool comes equipped with a 16-channel wave generator and a sloping mechanism to change the otherwise consistent depth, both of which are removable courtesy of a large crane that hangs above.

For the moment, though, as we congregate around an old Dell Latitude seated on an office chair next to the metal guard rails, the water looks pristine and serene enough to dive into — were it not for that severely limiting 5.5-foot depth. Our guide has taken the laptop out for demo purposes, to show off a video of a prototype unmanned undersea vehicle (UUV) that happens to be seated on an identical rolling office chair just to its right. It's a long, pill-shaped affair with a bright blue and yellow checkerboard shell that makes it look a bit as if it were birthed by the industrial design team at Nerf. There are two long holes on either side of the robot, from which sharp synthetic fins protrude.

Unfortunately, the demo isn't in working order today, so we're forced to crowd around the Latitude to watch the UUV swim laps across the pool in video form.

"We started looking at fish as inspiration, because we see them out in the ocean all the time operating in these kinds of environments," Dr. Jason Geder, one of the lab's engineers, begins, explaining the impetus behind the bot, which could some day see action as a reconnaissance tool in choppy waters not easily navigated with propeller-driven vehicles. "One of the fish that we saw, called the bird wrasse, uses, almost solely, its pectoral fins to maneuver. So that's where we took inspiration for that and then we started using some 3D computational fluid dynamics tools to really model those fins, match it up, make sure the forces were matching what biologists were measuring for the actual fish fin. Then we started to design, doing iterative process using the 3D CFD (computational fluid dynamics) tool along with mechanical engineering designs to build something that would be mechanically feasible, a simpler design, but would still maintain the high thrust, high force that basically the fish were getting."

In another corner of the room sits what appears to be a large blue-green kiddie pool full of sickly, stagnant water, as if it

U.S. NAVY PHOTO BY MASS COMMUNICATION SPECIALIST 3RD CLASS A.J. JONES

1964-66

Aqueous Film-Forming Foam (AFFF)

Putting safety high on the list, AFFF is developed to combat fuel-based fires, creating a film on the surface, dousing the flames and preventing reignition. AFFF is now used on all US Navy aircraft carriers and many highly flammable zones such as major airports and refineries.

1964-77

TIMATION & NAVSTAR GPS

The TIMATION (time / navigation) system is developed, leading to the TIMATION-1 satellite, NAVSTAR GPS and finally having the voice of Snoop Dogg as your streetwise co-pilot.

was left out in the yard after some freak tropical storm. It's a sediment tank, hooked up to a variety of sensors that sit on a desk nearby, connected by some heavy-duty looking cables. The Navy is monitoring the material's potential for energy, exploring the possibility of harnessing the dead organic material as a battery, generating electricity to power all manner of marine tools. The sea floor, according to the Navy's scientists, is, essentially, just one giant battery waiting to be utilized.

Our guide warns of adverse effects to our cameras and recording devices before leading us into the last of the three high bays, and sure enough, when the door opens, a wall of heat and humidity escapes from the room like a slap to the face. It's a constant 80-plus degrees at 80 percent humidity, as evidenced by the monitors mounted along a concrete wall — though, admittedly, a bit of both was lost when air leaked out into the sterile hall as the group was led in. The jungle room is easily the most visually impressive of the three simulated environments, designed to mimic a Southeast Asian landscape, complete with a three-tiered forest made from rainforest trees and a man made stream running through its center. Foliage from the canopy is allowed to drift down to the soil below and ultimately serves as fertilizer for the climate-controlled ecosystem. It's the circle of life on some small, closely monitored scale. The LASR employees have also begun introducing regional insects into the mix to help keep its delicate balance — and, should those insects get out of hand, some predatory species to chomp down on them.

The tour guide points to a spot for us to direct our cameras, and indeed, if you position them just right, aiming slightly downward, with the low canopy occupying the upper-frame and ignore, for a moment, the concrete constructed stream, you can grab a shot that looks like it was snapped during a trip to Southeast Asia. As the room's purpose is brought to light, it's clear that the warning we received wasn't without merit. The Jungle High Bay was created — or, perhaps, more appropriately, cultivated — in part to test the effects of rain and humidity on electronics. And indeed, the setup is capable of generating six-plus inches of precipitation in an hour.

The Tropical High Bay is a 60-foot by 40-foot green-house, containing a re-creation of a Southeast Asian rain forest.

PHOTO: JAMIE HARTMAN / NRL

U.S. NAVY PHOTO BY JOHN F. WILLIAMS

1981

Navy Center for Applied Research in Artificial Intelligence (NCARAI)

Seeing the vast potential for this future tech, the NCARAI is established to begin research on intelligent autonomous and human-centered systems with complex decision-making, learning and interactive abilities.

2004

BUG (Benthic Unattended Generator)

Billed as a "marine environment generator," this little bottom dweller turns underwater sediment and oxidants into electricity, using the seafloor as one big power source.

Robots are also being designed specifically to traverse this unforgiving terrain. Our guide speaks briefly of the possibility of a serpentine robot that can move across the ground without having to muck up its wheels and an aerial bot that attaches to a tree, extending its wings to suck in energy from the sun. The conversation feels largely hypothetical, however. For the moment, the pristine landscape remains undisturbed by these or any robots, a relative rarity behind LASR's doors.

Certainly this isn't the case with the Prototyping High Bay, a cavernous, garage-like space in which the Navy tests autonomous vehicles of all sizes and shapes. We watch from behind a wall of glass as an aerial drone with up-pointed wings sores around the space, giving some perspective to just how large the room is, flying past checkerboard walls and a series of red and blue sensors that line the top, making up an extensive motion control system capable of tracking up to 50 objects at once, within a tenth of a millimeter. The plane itself has two sonar sensors built in, a design borrowed from nature to help the vehicle avoid trees or buildings without relying on GPS.

Down below is a facade of a room, constructed with movable, light green walls, like the makeshift setting for some high school play. A mostly empty bookcase leans up against one, with two cameras on tripods set up to record the action. Standing out in front of the scene is Lucas, a big, baby-headed robot with a smooth, robotic monotone and eyebrows and eyelids that make him appear perpetually sleepy, an effect that's at once reassuring and creepy. There's a sensor smack dab in the center of Lucas' forehead, the back of his head is left open to let out a flood of wires connected to his body, itself made partly from a Segway.

Lucas is a Mobile, Dexterous, Social (MDS) robot, designed in part as a computational cognitive model, an attempt to mimic some low-level version of human logic, in order to better interact with his fleshy colleagues. Two scientists engage Lucas in conversation, asking him to help fight a hypothetical fire on a ship. His eyes widen, his eyebrows shift and his head tilts slightly to the right into a quizzical position. Ten seconds later, he answers calmly: "There must be a misunderstanding."

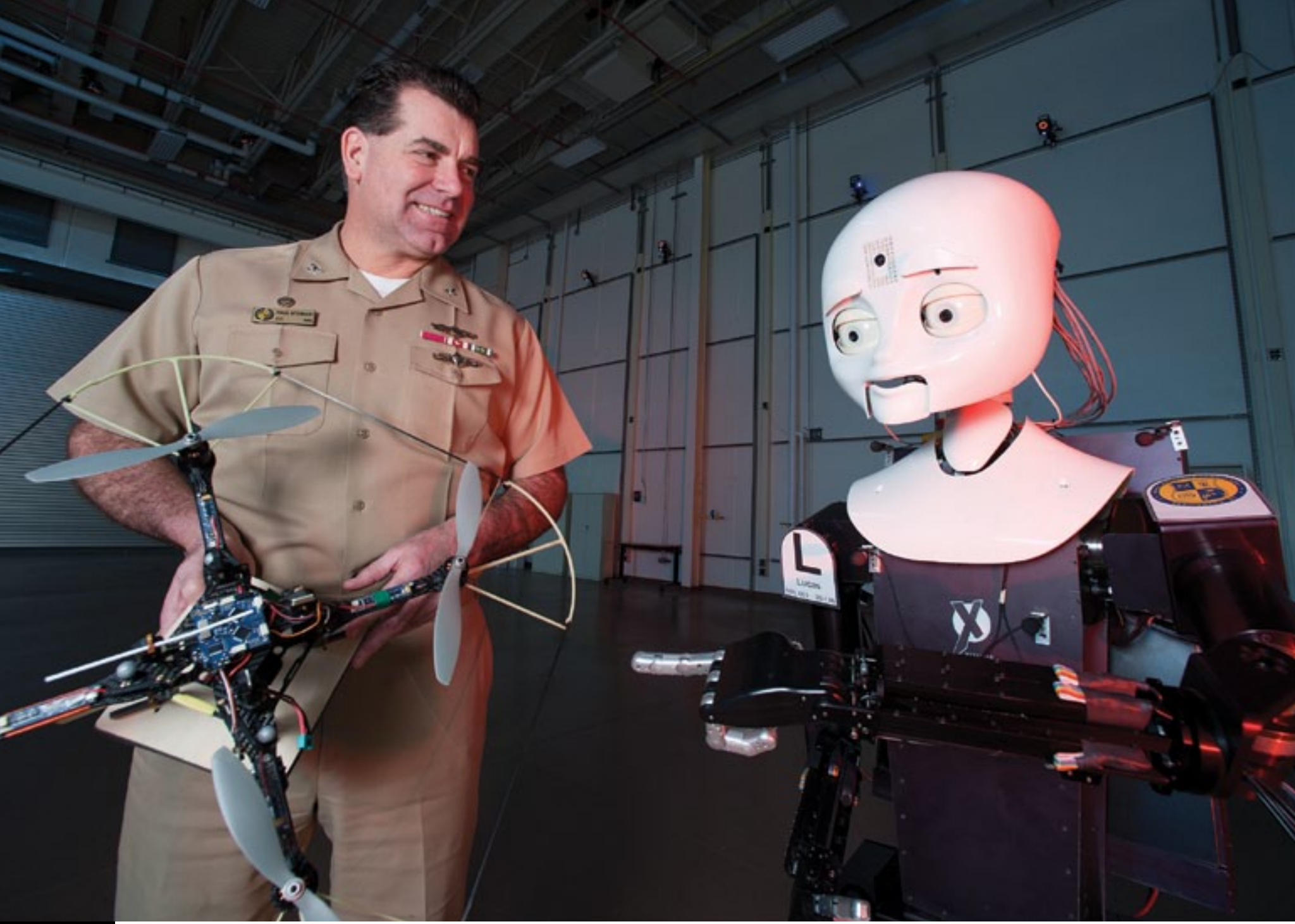


PHOTO: JAMIE HARTMAN / NRL

Lucas, a Mobile, Dexterous, Social robot, and Capt. Paul Stewart, NRL's commanding officer, stand in the Prototyping High Bay at LASR.

He explains the situation succinctly, unblinkingly. The fire the second scientist mentioned has actually been contained, but now there's another one to contend with. His mouth moves, roughly in sync with his words, but his head is otherwise stationary. It's all rather eerie.

The scientists are attempting to instill the mayor of the uncanny valley with theory of mind — the knowledge that other beings (in this case humans) have different thought processes. In other words, try as the military might to knock it out of them, sailors on ships plagued by fires don't think like machines. Lucas is also equipped with infrared cameras and sensors, which all help him to triangulate a fire.

This particular model is also packing a fire extinguisher (that's where the "dexterous" in the MDS acronym comes in), and when a (controlled) fire breaks out in the little green room Lucas hops into action. Well, not "hops" so much as "assesses the situation," eventually extinguishing the fire. It

U.S. NAVY PHOTO BY JOHN F. WILLIAMS

2012

Laboratory for Autonomous Systems Research (LASR)

NRL adds a new research facility with the deceiving acronym LASR in an effort to expedite prototype research within a variety of hostile environments, all conveniently recreated in their own backyard.

is a rather lengthy process, despite the extremely close proximity of the blaze. It's a bit frustrating watching the circuits in his head work through reasoning exercises as the nearby fire reflects on his shiny skull. As impressive as Lucas' reasoning skills may be, he's not exactly ready to step into the role of fire warden on any naval ships at the moment.

Of course, there's an important reminder in all of this. The "L" in LASR is for laboratory (there aren't, as one reporter made a point to clarify, any actual lasers to speak of) and as such, these are not quite battle-ready robots we're dealing with here. At present, Lucas certainly isn't the most efficient way to extinguish a fire, but that's not really the point. He's got bigger fish to fry, like wrapping his terrifying infant skull around concepts of human reasoning, a big baby-headed attempt to think like a person so that he might someday work alongside them.

It's easy, too, as you're shuttled through the halls, to forget the ultimate purpose of all this research. It's a fact we're gently reminded of at the close, as Rear Admiral Matthew Klunder fields a question from a military media representative regarding how the facility will ultimately benefit the armed forces. "Everything we do here, is not only just for the betterment of science, technology and the nation as a whole, but we have a connective tissue to those technologies — to war-fighting capabilities."

With just our tour stops as context, it's easy to imagine the US as a peace-keeping nation. But, as we're crowded around Lucas and his human friends, one reporter asks, off-handedly, whether the fire extinguisher in his dexterous hands could potentially be swapped out for a firearm. It's suddenly much easier to view those tired robot eyes in a more sinister context. Sending autonomous bots into battle would certainly have its benefits. Of course, that's purely a hypothetical scenario, one that doesn't quite fit the picture that we've seen of the $17 million facility, seated on the shores of the Potomac. And certainly for as long as mankind is at war, there will be plenty of fires to put out. The driving force behind LASR seems to be the never-ending search for a better way to do so.

IN REAL LIFE

Welcome to IRL, an ongoing feature where we talk about the gadgets, apps and toys we're using in real life and take a second look at products that already got the formal review treatment.

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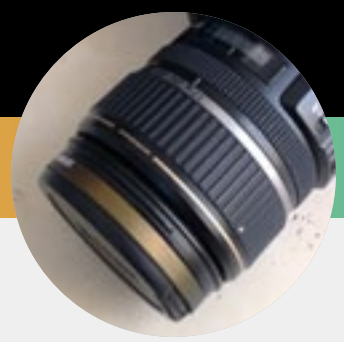
3. 

Logitech UE Air Speaker, the Canon Rebel XT and an Arduino Non-Starter

BY ENGADGET STAFF

Welcome back to IRL, and if we do say so ourselves, this week's edition is a doozy. On one end of the gadget-loving spectrum, Jason is still happily using his Canon Rebel XT, while Darren remains thoroughly unsatisfied with his $400 AirPlay speaker (it was easy to set up, at least — he'll give it that). And, just for good measure, we threw in an Arduino fail. So, which piece of audio gear is on our "do not buy" list? Who needs to take a course in wiring-based coding? And does Jason have *anything* negative to say about his DSLR? Venture on ahead for all the details.

Logitech UE Air Speaker

I've been a fan of Logitech's speakers for years now, so I had fairly high hopes for the AirPlay-enabled UE Air. And at $400, I'd say those hopes were justified. I was promised a rather svelte looking setup that's capable of pumping out the smoothest of smooth jams without wires, but I sadly found that it doesn't exactly hit the nail on the proverbial head when it comes

to audio quality. Getting started, at least, was a breeze. You can opt to use a free iOS app, or do as I did and set things up via a web browser. Within 90 seconds, I had the speaker linked to my WiFi network and had located the device in iTunes and MOG. Beyond that, things weren't as rosy.

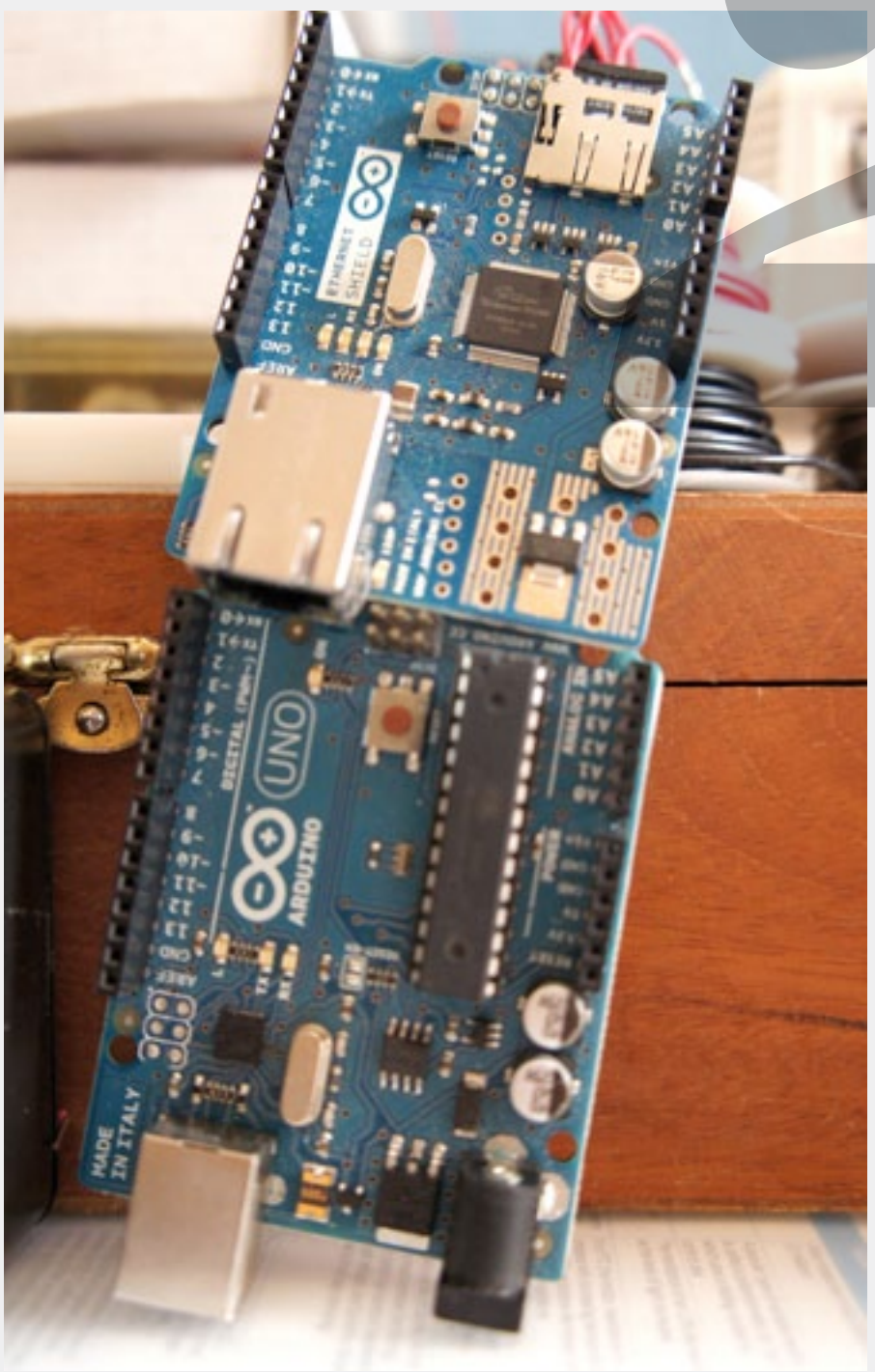
For starters, there's no bundled remote. This wouldn't be an issue in the least if Apple allowed the volume controls on its MacBook Pro keyboards to dictate volume on AirPlay devices, but alas, that's currently not possible (shocking, right?). What you're left with are two awful options: get up and spin the (admittedly elegant) volume wheel on the device, or dig up whatever music app you're using and click on the microscopic volume slider within iTunes / MOG / etc. I shouldn't have to explain why neither of those choices appeals to me; I just purchased a $400 wireless speaker. Why should controlling the volume be this inconvenient? More troubling, however, was the ear-shattering sounds that were emitted each time I booted the speaker up or even gently tweaked the volume slider in the MOG desktop app. I was just about deafened on a few occasions, and with no easy option to turn things down, well... it's just not pleasant to use.

And then, there's sound quality. It's thoroughly middling. For a speaker with "Ultimate Ears" on it, there's really nothing ultimate about the audio. The low-end is — for all intents and purposes — missing completely. It's actually kind of puzzling how large this speaker is given the abject lack of bass output. At high volume levels, even the highs crack up; as *TechCrunch's* Matt Burns says, "This is no party speaker." Truthfully, I still think my aging Logitech mm50 (which can be had for around $40 on eBay) provides better sound quality per dollar, even at its old $99 MSRP. The Logitech UE Air boasts pleasing aesthetics, but everything else is decidedly ho-hum — and for $400, you shouldn't have to deal with a ho-hum speaker. (On a side note, there are *major* dropout issues when streaming MOG to an AirPlay speaker; the device handled iTunes playback fine (with local MP3 files), but throw in an extra level of streaming and things get downright unusable.) *— Darren Murph*

Arduino Uno

Sometime last year I decided I simply had to have an Arduino. And who could

blame me? It seemed like every awesome DIY project I was writing about had one of the hacker-friendly boards inside. I owed it to my geek cred to immerse myself in the DIY movement and order an Arduino Uno. When it arrived I anxiously tore open the packaging like a six-year-old on Christmas morning and spent hours that day fiddling with it and pasting sketches into the IDE (you know, in between getting actual work done).



Now, here's where I let you in on a little secret about myself: I'm insanely impatient. After three days I could make the damn thing blink lights, make noises and respond to the press of a button. Beyond that I was lost. And, truth be told, I probably couldn't have recreated those sketches without having the examples staring me in the face. So, after less than a week, my love affair with Arduino came to an end and I went back to living vicariously through others who were more creative and technically adept.

A couple of months ago I picked the board back up and ordered an Ethernet shield to pair with it, convinced that a lack of connectivity was stifling my creative juices. I cracked the books back open and started meticulously pouring over the example sketches, trying desperately to figure out this foreign language. (And the wiring-based coding environment, which is itself based on C, is just that — a foreign language.) And, here's another secret: I suck at languages. Three years of Italian in High School and two years of college Spanish and I can't even order in a restaurant. Heck, I can barely read music and I've been playing guitar for almost 20 years. So, now the Arduino and its accom-

panying shield sit on my desk next to my ThinkPad, serving as a constant reminder of my failure. — *Terrence O'Brien*

Canon EOS Digital Rebel XT

I still remember how excited I felt the first time I took out my new Canon Digital Rebel XT from its box seven years ago. Prior to getting this camera, the only other SLR I'd had was an old-school Pentax K1000, which I sadly had to part with after college due to an unfortunate condition known as "broke-itis." Then in 2005, I was told by my newspaper editor that I needed to shoot my own photos during a three-month stint in Japan. In short, I needed a new camera. Given the fact that I was not a professional photographer — as well as the lingering effects of my, uh, aforementioned condition — I settled on a more affordable shooter, the Rebel XT.

Since then, the camera has proved to be quite the reliable sidekick. Whether it be a snow-filled shrine by Mount Fuji or Rome's eerily quiet streets after the tourists have checked in for the evening, the Rebel XT delivers. Its light weight relative to more heavy-duty pro cameras makes it a good digital SLR for traveling. I don't know how many times I just grabbed the camera and a light tripod to do a quick day trip on a whim. The ability to fine-tune the settings to match lighting conditions or achieve a certain effect — along with the instant response I get once I hit the shutter — was something I missed terribly when I eventually bought a point-and-shoot.

Admittedly, the Rebel XT feels a bit plasticky and its ISO range isn't as wide compared to newer models. As someone who used to minor in photography, I admittedly feel a bit sheepish when I go to family gatherings and see relatives who only occasionally dabble in photography whipping out cameras that cost triple what mine did. As tempting as it's been to move up to a more professional-grade camera, though, my XT is still more than enough camera for the more leisurely kind of shooting that I do these days. Besides family photos, I've used this camera to nail shots of waterfalls and fireworks, among other things. Granted, I've used it to take my fair share of not-so-good photos, too — but those were due mostly to poor technique on my part. If anything, what I could really use right now is a new, faster lens. After looking at lens prices, though, it appears that my old "condition" is mysteriously acting up again... — *Jason Hidalgo*

THE TAPBOTS CO-CREATOR REFLECTS ON MIDDLE SCHOOL SWAG AND HIS YELLOW SONY SPORTS WALKMAN.

MARK JARDINE

Q&A

What gadget do you depend on most? My iPhone. It's the only device I carry with me everywhere I go and my left front pocket is dedicated to it. It provides more useful services than any other gadget I own. And it also happened to lead me to designing software and starting a company.

Which do you look back upon most fondly? My Sony Clié PEG-NX70V. It wasn't my first portable computing device, but it was the most memorable one (at least before iOS). I took it on a trip to Germany and used it for capturing moments more than the real camera I brought with me. It had a beautiful display for its time and it felt great to hold. My favorite part was the hardware keyboard hidden behind the swivel display.

What are your favorite gadget names? Dreamcast, Gamecube, iPod, and the PowerBook / Power Mac. I'm sure there are much better names that I just can't think of at the moment.

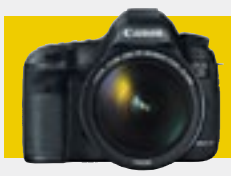
What are your least favorite? Almost anything from Sony. Clié? Vaio? Seriously? However, I have to admit they did okay naming the Walkman, Discman, and PlayStation. What I hate more than some of the Sony product names is ones with a series of alphanumeric characters.

Which app do you depend on most? Probably Messages / iMessage. I rarely talk on my iPhone. I always send text messages. With the Messages beta on the Mac, it's become even more valuable. Since we both work remotely and over chat, my business partner and I can continuously communicate whether I'm at my desk or on the go. The Messages app beta is extremely buggy, but I see a bright future once it's working smoothly.

What traits do you most deplore in a smartphone? When features or apps are poorly thought out or rushed. I also despise when companies add features for the sake of having more bullet points. Features should be added to solve real problems first, not just to try and sell the device.

Which do you most admire? When things work just as you had expected or hoped. What's even better is when they work better than you thought possible.

What is your idea of the perfect device? I'm very happy with the iPhone as it is today. I think I'd be happier if the screen was slightly larger and the battery lasted longer. It's long enough by today's standards, but the current state of battery technology is

As of right now that would be the third generation iPad  or the  5D Mark III. I must have them both.

sad. I feel like that's the bottleneck we need to get past.

What is your earliest gadget memory? The Atari 2600. My dad bought it for himself, but I ended up playing it the most. I have fond memories of playing a lot of *Combat* and *RealSports Baseball*. I also remember having a Yellow Sony Sports Walkman which was pretty cool. It had two headphone jacks built in and I remember girls would sit next to me on the bus to listen to music with me when I was in middle school.

What technological advancement do you most admire? Remembering the days of the Atari 2600 and Commodore 64, I'd have to say seeing graphics technology improve over the years has been really amazing to watch. But not just how we've gone from 2D to 3D and then more realistic with advanced lighting, shaders, mapping, and etc. I'm amazed at how these graphics are moving to smaller devices with higher display resolutions. I wish I could take my iPhone 4S and PS Vita back in time and show my childhood self what's in store for the future.

Which do you most despise? I hate the fact that our expectations for technology to just work gets higher as things get more advanced. I remember when it took five to 10 minutes to download an image and in the middle of that your internet connection would cut out because someone was calling you. Then you'd have to spend a few minutes while the modem would connect again. Today, I get frustrated when my cell phone doesn't send an eight-megapixel photo fast enough over 3G. Yea, I know...first world problems.

What fault are you most tolerant of in a gadget? I guess I'd have to say battery life. My iPad gets 10 hours and my Vita gets about 3. I accept the horrible battery life in the Vita because of its size and graphical capabilities.

Which are you most intolerant of? Low frame rates. I can't stand a device that doesn't have a smooth and responsive interface. I just won't use it. My wife bought me a Kindle Fire for Christmas and I would have loved to have one around, but I kept reading about the frame rate issues in practically every review so I just returned it before even giving it a shot.

When has your smartphone been of the most help? Probably whenever I am lost and need a map. I'm still amazed that I can walk around and not only be pinpointed on a map, but also see the direction I'm facing. I have fond memories of pulling over on the side of the road in San Francisco and pulling out a large paper map only to spend five minutes searching for where I am.

What device do you covet most?

ANSWER

If you could change one thing about your phone what would it be? The display would be a little bit larger and provide better battery life. I'm fine with the iPhone display size until I have to type a lot. I tend to make a lot of errors and auto-correct seems to get worse over time. I should probably reset my auto-correct dictionary.

What does being connected mean to you? These days I feel like I'm connected to the internet when I have my Twitter feed open. Similar to chat rooms, it just feels like a community around you. Back when I was in college I remember keeping a Yahoo Chat session open in the corner of my screen while I did work on my computer. I guess Twitter is the modern day version of that.

When are you least likely to reply to an email? When my reply requires more than a few minutes to type. I think Twitter and Facebook made us all lazy.

When did you last disconnect? I feel disconnected when I'm away from a desktop computer.

What do you think of Facebook buying Instagram?

LARRY LLEWELLYN, 67
RETIRED

PAT HARKER, 23
UNEMPLOYED

ANTONIO PEREZ, 65
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The Last Word - Box Brown

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